DOCUMENT RESUME

ED 439 599 EF 005 765

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TITLE Condition of America's Public School Facilities, 1999. Statistical Analysis Report.

INSTITUTION National Center for Education Statistics (ED), Washington, DC.

REPORT NO NCES-2000-032

PUB DATE 2000-06-00

NOTE 118p.

AVAILABLE FROM ED Pubs, P.O. Box 1398, Jessup, MD 20794-1398; Tel: 877-433-7827 (Toll Free). For full text: http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2000032.

PUB TYPE Numerical/Quantitative Data (110) -- Reports - Research (143) -- Tests/Questionnaires (160)

EDRS PRICE MF01/PC05 Plus Postage.

DESCRIPTORS *Crowding; *Educational Environment; *Educational Facilities Improvement; Elementary Secondary Education; *National Surveys; *Public Schools

ABSTRACT

This report provides national data for 903 U.S. public elementary and secondary schools on the condition of public schools in 1999 and the costs to bring them into good condition. Additionally provided are school plans for repairs, renovations, and replacements; data on the age of public schools; and overcrowding and practices used to address overcrowding. Among the findings are: about a quarter of the schools reported at least one type of onsite building in less than adequate condition; half reported at least one building feature in less than adequate condition; and about 4 out of 10 reported at least one unsatisfactory environmental condition. Data also suggest that the oldest schools are most in need of attention but that many of these schools do not have plans for improvement. About three-quarters of public schools do not have problems with overcrowding, but nearly 10 percent have enrollments that are more than 25 percent greater than the capacity of their permanent buildings. Appendices provide survey methodology, tables of standard errors, and the survey questionnaire. (Contains 34 references.) (GR)

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NATIONAL CENTER FOR EDUCATION STATISTICS

Statistical Analysis Report — June 2000

Condition of America's Public School Facilities: 1999

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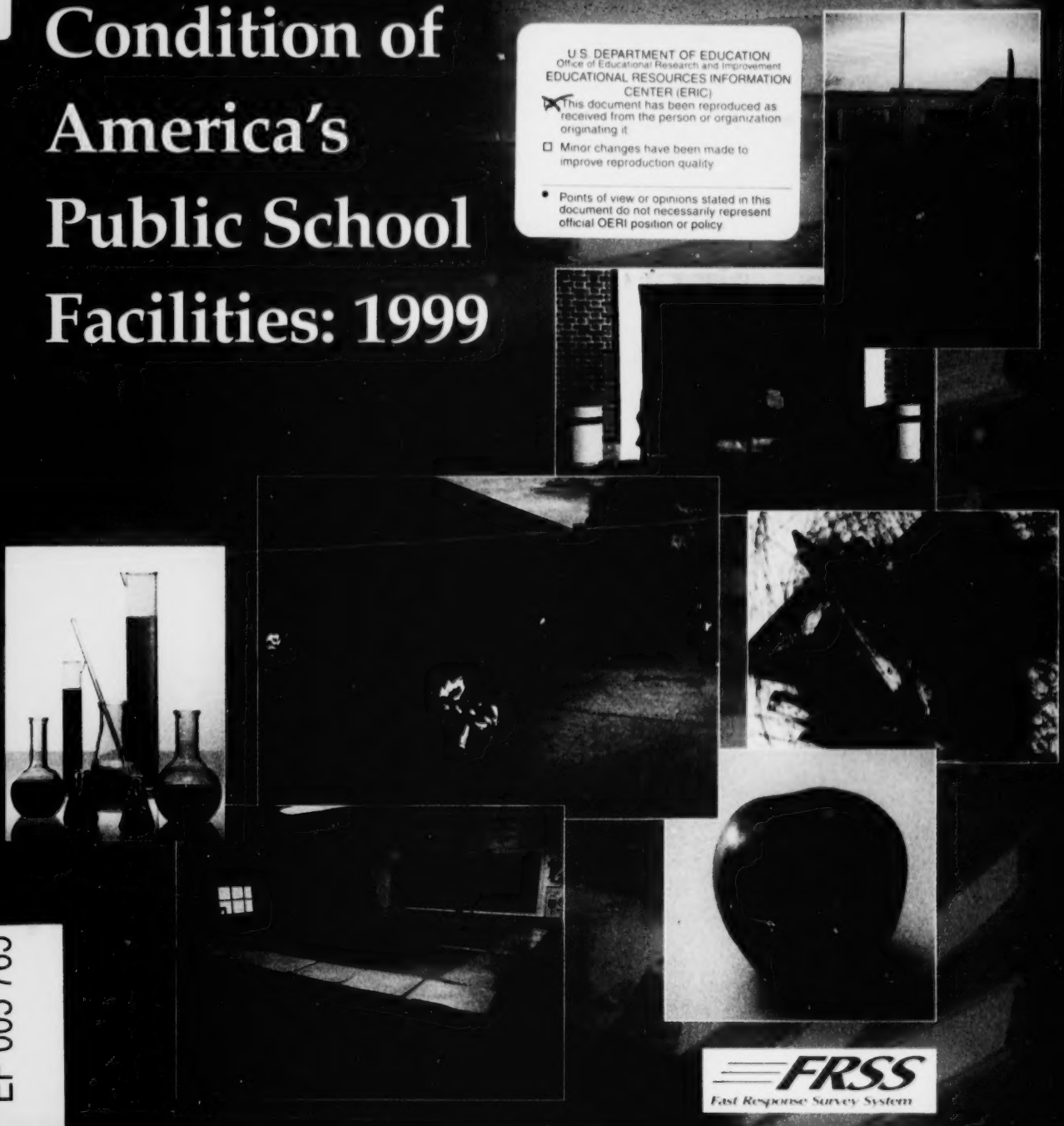

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NATIONAL CENTER FOR EDUCATION STATISTICS

Statistical Analysis Report June 2000

Condition of America's Public School Facilities: 1999

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Suggested Citation
U.S. Department of Education. National Center for Education Statistics. *Condition of America's Public School Facilities: 1999*, NCES 2000–032, by Laurie Lewis, Kyle Snow, Elizabeth Farris, Becky Smerdon, Stephanie Cronen, and Jessica Kaplan. Project Officer: Bernie Greene. Washington, DC: 2000.

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EXECUTIVE SUMMARY

Background

Over the past decade, the physical condition of America's public schools has received considerable attention (e.g., Kozol 1991; Lewis et al. 1989). For example, a number of lawsuits challenging school funding for facilities have drawn attention to the poor conditions that many students encounter at school [e.g., *Roosevelt Elementary School No. 66 v. Bishop*, 877 P. 2d 806 (Ariz. 1994)]. Newspaper stories and research studies describing poor ventilation, broken plumbing, and overcrowding have raised concerns about the effects of school facilities on teaching and learning. More importantly, some conditions, like sagging roofs or poor air quality, have raised serious questions about student and teacher safety.

The physical condition of schools is described in a series of reports based on a 1994 study conducted by the United States General Accounting Office (GAO). In addition, several studies have reported on school repair and construction costs, each with a somewhat different focus. The 1994 GAO study provided estimates of the cost of repairs, renovations, and modernizations to put schools into good overall condition (U.S. GAO 1995a), while a more recent GAO study reported actual school construction expenditures for fiscal years 1990 through 1997 (U.S. GAO 2000). Another report included actual costs of completed school construction projects in 1998 and projected expenditures for new construction, additions, and renovations for 1999 (Abramson 1999). A report recently released by the National Education Association (NEA) gave a cost estimate of the funds needed for various kinds of school infrastructure (including new construction) and education technology (NEA2000).

This report provides national data about the condition of public schools in 1999 based on a survey conducted by the National Center for Education Statistics (NCES) using its Fast Response Survey System (FRSS). Specifically, this report provides information about the condition of school facilities and the costs to bring them into good condition; school plans for repairs, renovations, and replacements; the age of public schools; and overcrowding and practices used to address overcrowding. The results presented in this report are based on questionnaire data for 903 public elementary and secondary schools in the United States. The responses were weighted to produce national estimates that represent all regular public schools in the United States. Information about the condition of school facilities is based on questionnaire rating scales rather than on physical observation of school conditions by outside observers.

Key Findings

Estimates of Cost to Put Buildings Into Good Condition

A major barrier for schools to improve their facilities is the substantial cost (U.S. GAO 1995a). If schools are unable to obtain the funding they need to perform maintenance or construct new buildings when necessary, facilities problems multiply, which can result not only in health and safety problems, but also in increased costs of repairs (Hansen 1992). Results of the 1999 FRSS survey indicate that:

- Three-quarters of schools reported needing to spend some money on repairs, renovations, and modernizations to put the school's onsite buildings into good overall condition[1] (table

[1] Schools that reported on the questionnaire that the condition of any type of onsite school building (original and temporary buildings, permanent addition) *or any building feature* (e.g., roofs, plumbing, electric power) was less than good (i.e., any type of building or building feature was given a rating of adequate, fair, poor, or replace) provided information about the cost of the needed repairs, renovations, and modernizations. This is somewhat different from the approach used by GAO in 1994, which prevents direct

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5). The total amount needed by schools was estimated to be approximately $127 billion (see table 23 in appendix B).

- The average dollar amount per school for schools needing to spend money was about $2.2 million (see table 23 in appendix B). The average cost per student of repairs, renovations, and modernizations to put the school into good overall condition among the schools that reported needing to spend money was $3,800 (table 5).

Types of School Buildings and Overall Facilities Conditions

Observations of school facilities have appeared in headlines, speeches, and reports that focus on the deteriorating environmental and physical conditions of the nation's schools. Results of the 1999 FRSS survey confirm that although most schools are in relatively good condition, many schools are in less than adequate condition:

- One in four schools reported that at least one type of onsite building (i.e., original and temporary buildings, permanent additions) was in less than adequate condition.[2]
- Approximately 11 million students were enrolled in schools reporting at least one type of onsite building in less than adequate condition (table 3). Of these students, about 3.5 million attended schools where at least one type of building was in poor condition or needed to be replaced because it was non-operational or showed significantly substandard performance (see table 23 in appendix B).
- Eighty-one percent of schools reported that their original buildings were in adequate or better condition, 84 percent of those schools with permanent additions reported them to be in adequate or better condition, and 81 percent of schools with temporary buildings reported them to be in adequate or better condition (table 1). This means that approximately one in five schools having a particular type of building reported that these building types were in less than adequate condition. This included 4 to 6 percent reporting buildings in poor condition (defined as consistent substandard performance), and 1 to 2 percent reporting that buildings needed to be replaced due to significantly substandard performance or non-operational condition.
- The condition of original buildings and temporary structures did not vary significantly by school characteristics[3]; however, the condition of permanent additions varied by concentration of poverty: schools with the highest concentration of poverty (defined here as 70 percent or more of the students eligible for free or reduced-price lunch) were more likely to report that their permanent additions were in less than adequate condition than were schools with 20 to 39 percent or schools with less than 20 percent of their students eligible for free or reduced-price lunch (30 percent versus 13 percent and 8 percent, respectively; table 2).

Condition of Building Features

The 1999 FRSS survey on the condition of public school facilities also collected information on the condition of nine different building features: roofs; framing, floors, and foundations; exterior walls, finishes, windows, and doors; interior finishes and trim; plumbing; heating, ventilation and air conditioning; electric power; electrical lighting; and life safety features. The 1999 FRSS survey found that:

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comparison of the cost estimates between the FRSS and GAO studies.

[2] This is based on types of onsite buildings, and does not include building features. It is also based on ratings of less than adequate condition, which includes the ratings of fair, poor, and replace.

[3] The school characteristics used as analysis variables in this report are school instructional level, school enrollment size, locale (central city, urban fringe/large town, rural/small town), region, percent minority enrollment, and percent of students in the school eligible for free or reduced-price school lunch (which indicates the concentration of poverty in the school). Throughout this report, differences (particularly those by school characteristics) that may appear large may not be statistically significant. This is due in part to the relatively large standard errors surrounding the estimates (because of the small sample size) and the use of the Bonferroni adjustment to control for multiple comparisons.

- Fifty percent of schools reported that at least one of the nine building features at their school was in less than adequate condition (table 4), and three-quarters of those schools had more than one building feature in less than adequate condition (figure 1). Schools in central cities were more likely than schools in urban fringe areas and large towns to report at least one building feature as less than adequate (56 percent compared with 44 percent; table 4). Schools with the highest concentration of poverty (70 percent or more of the students eligible for free or reduced-price lunch) were more likely to report that at least one building feature was in less than adequate condition than were schools with 20 to 39 percent or schools with less than 20 percent of their students eligible for free or reduced-price lunch (63 percent versus 45 percent each).
- Approximately one-fifth of schools indicated less than adequate conditions for life safety features, roofs, and electric power, and about a quarter of schools reported less than adequate conditions for plumbing, and for exterior walls, finishes, windows, and doors (table 4). Heating, ventilation, and air conditioning systems were reported to be in less than adequate condition at 29 percent of schools.

Environmental Conditions

Environmental conditions, such as heating, ventilation, and air conditioning, are important aspects of the day-to-day environment for students. The 1999 FRSS survey on the condition of public school facilities also collected information on satisfaction with six different environmental conditions: lighting, heating, ventilation, indoor air quality, acoustics or noise control, and physical security of buildings. The results of the 1999 FRSS survey indicate that:

- Forty-three percent of the schools reported that at least one of the six environmental factors was in unsatisfactory condition (table 8), and approximately two-thirds of those schools had more than one environmental condition in unsatisfactory condition (figure 2). Ventilation was the environmental condition most likely to be perceived as unsatisfactory (26 percent of schools; table 8). About a fifth of schools reported they were unsatisfied with heating, indoor air quality, acoustics or noise control, and the physical security of buildings, and 12 percent were unsatisfied with lighting conditions.
- Schools in rural areas and small towns were more likely than schools in urban fringe areas and large towns to report that at least one of their environmental conditions was unsatisfactory (47 percent compared with 37 percent; table 8). Schools with the highest concentration of poverty were more likely to report at least one unsatisfactory environmental condition than were schools with the lowest concentration of poverty (55 percent compared with 38 percent).
- About one-third of schools were unsatisfied with the energy efficiency of the school, and 38 percent were unsatisfied with their flexibility of instructional space (see table 23 in appendix B).

Plans for Repairs, Renovation, or Replacement

The condition of school facilities is continuously changing, and information about schools' future plans for building or installing new structures or additions, as well as plans to make major repairs, renovations, or replacements in the next 2 years, may provide insights into the future condition of these facilities. The 1999 FRSS survey found that:

- About two-thirds of public schools had written long-range facilities plans that guide their planning for facilities improvements (table 12). One-fifth of schools reported plans to build new attached and/or detached permanent additions in the next 2 years, and 1 in 10 reported plans to install new temporary buildings in the next 2 years (table 13).
- About half of the schools planned to make major repairs, renovations, or replacements to at least one building feature in the next 2 years (table 14). Overall, 41 percent of schools indicated plans to make major repairs

or renovations to at least one building feature, and one-quarter planned to replace at least one building feature in the next 2 years.

- Schools in less than adequate condition were more likely to have plans for repairs, renovations, or replacement. While 46 percent of schools in adequate or better overall condition reported plans to repair, renovate, or replace at least one building feature in the next 2 years, 67 percent of schools in less than adequate condition reported such plans (figure 4).

Functional Age of Schools and School Conditions

A number of reports have raised concerns about the age of America's public schools (e.g., U.S. Department of Education 1999b). Because age of the building, by itself, may be somewhat less important than its history of maintenance and renovation, a more accurate indication of a school's age is its functional age. Functional age is defined as the age of the school based on the year of the most recent renovation or the year of construction of the main instructional building(s) if no renovation has occurred. Results of the 1999 FRSS survey indicate that:

- In 1999, the average age of the main instructional building(s) of public schools was 40 years, based on years since original construction (table 17). Among schools that had been renovated since construction, the renovation, on average, occurred 11 years ago.
- The average functional age of schools, based on the year of the most recent renovation or the year of construction if no renovation had occurred, was calculated to be 16 years. In general, average functional age did not vary by school characteristics, although small schools were older than medium or large schools.
- The functional age of schools was found to be related to their condition. Older schools were more likely than newer schools to report less than adequate or unsatisfactory conditions (figure 6).

Overcrowding

Dramatic increases in enrollment due to the "baby-boom echo," immigration, and migration have led many schools to enroll far more students than they were designed to accommodate.[4] Compounding these conditions are initiatives to reduce class size, resulting in the need for even more classrooms. As the public school system copes with such conditions, there is growing concern about the degree of overcrowding that may exist in some schools. This report provides information about the extent to which public schools are overcrowded, at capacity, or underenrolled.[5] Overcrowded schools were defined as having an enrollment that was more than 5 percent above the capacity of the school's permanent instructional buildings and space (i.e., overenrolled). Schools with enrollments within 5 percent of the capacity of their permanent buildings and space were considered to be at capacity, and schools with enrollments more than 5 percent below the capacity of their permanent buildings and space were considered underenrolled. The 1999 FRSS survey indicates that:

- Overall, about half of public schools were underenrolled, about one-quarter were within 5 percent of their capacity, and about a quarter were overcrowded, based on the capacity of their permanent instructional buildings and space (table 19).
- Large schools were more likely than other schools to be seriously overcrowded (more than 25 percent overenrolled), while small schools were more likely than other schools to be severely underenrolled (table 19).

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[4] Migration patterns (e.g., families moving out of particular areas) and decisions families make with regard to their children's schooling (e.g., private school enrollment) may also lead to a *decline* in enrollments among some public schools. These declines may result in schools that are *underenrolled*.

[5] The proportion indicating the degree to which enrollment exceeds or falls below the capacity of the permanent buildings and instructional space was calculated using the following formula:

X = [(total student enrollment) – (capacity of permanent instructional buildings and space)] / (capacity of permanent instructional buildings and space)

Schools with a high minority enrollment (more than 50 percent) were more likely than schools with a low minority enrollment (5 percent or less) to be seriously overcrowded.

- Schools that were classified as overcrowded were more likely than other schools to report that at least one type of onsite building was in less than adequate condition (figure 9). Overcrowded schools were also more likely than other schools to have at least one building feature in less than adequate condition, and to have at least one environmental factor in unsatisfactory condition.
- About a third (36 percent) of schools indicated that they used portable classrooms, and 20 percent reported using temporary instructional space (table 22). Among these schools, most reported using portables and temporary instructional space to alleviate overcrowding.

Conclusions

Although the majority of America's public schools are in adequate or better condition, a sizable minority are not. About a quarter of the schools reported that at least one type of onsite building was in less than adequate condition, half reported that at least one building feature was in less than adequate condition, and about 4 out of 10 reported at least one unsatisfactory environmental condition. Data about the functional age of schools suggest that the oldest schools are most in need of attention, but that many of these schools do not have plans for improvement. About three-quarters of public schools do not have problems with overcrowding, but close to 10 percent have enrollments that are more than 25 percent greater than the capacity of their permanent buildings. Collectively, these data provide a complex portrait of the current physical condition and crowding in America's public schools. Although the majority of schools are in adequate condition, functionally young, and not overcrowded, a substantial number of schools are in poor condition, and some of them suffer from age and overcrowding. Past experience suggests that correcting these problems will be costly.

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1. INTRODUCTION

The physical condition of the nation's public schools has been an important topic of discussion among policymakers, educators, and parents in recent years. Newspaper stories (e.g., Nakamura 2000; Seymour 2000) and research studies (e.g., U.S. GAO 1995a) describing broken plumbing, poor ventilation, and overcrowding have raised concerns about the effects of school facilities on teaching and learning. There is also apprehension that older schools with outdated electrical wiring will be left behind newer schools in the effort to connect schools to the Internet. More importantly, some conditions, like sagging roofs or lead exposure, raise serious concerns about student and teacher safety.

Over the past decade, a number of lawsuits challenging school funding for facilities have drawn attention to the poor conditions that many students encounter at school. According to the Arizona Supreme Court, for example:

> Some districts have schoolhouses that are unsafe, unhealthy, and in violation of building, fire, and safety codes. Some districts use dirt lots for playgrounds. There are schools without libraries, science laboratories, computer rooms, art programs, gymnasiums, and auditoriums. But in other districts, there are schools with indoor swimming pools, a domed stadium, science laboratories, television studios, well stocked libraries, satellite dishes, and extensive computer systems [*Roosevelt Elementary School No. 66 v. Bishop*, 877 P. 2d 806 (Ariz. 1994)].

Similar descriptions can be found in a number of reports released by the United States General Accounting Office (GAO). According to a 1994 GAO study (1995a), approximately 14 million students attended schools that were in need of extensive repairs in 1994. In fact, at that time a majority of the nation's public schools (60 percent) were in need of repair.

The purpose of this report is to provide national data about the condition of public schools in 1999 based on a survey conducted by the National Center for Education Statistics (NCES) using its Fast Response Survey System (FRSS). FRSS is a survey system designed to collect small amounts of issue-oriented data with minimal burden on respondents and within a relatively short timeframe. The results presented in this report are based on questionnaire data for 903 public elementary and secondary schools in the United States. The questionnaire responses were weighted to produce national estimates that represent all regular public schools in the United States.

This report provides information about the condition of school facilities and the costs to bring them into good condition; school plans for repairs, renovations, and replacements; the age of public schools; and overcrowding and practices used to address overcrowding. Information about the condition of school facilities is based on questionnaire rating scales rather than on physical observation of school conditions by outside observers. The remainder of this chapter provides background information about the condition of school facilities.

What is the Condition of America's Public Schools?

Observations of school facilities have appeared in headlines, speeches, and reports that focus on the deteriorating environmental and physical conditions of the nation's schools. The Education Writers Association (Lewis et al. 1989), for example, reported a decade ago that the physical condition of one out of every four school buildings in America was inadequate. Of these, over 60 percent were labeled inadequate due to lack of repair and maintenance. In 1995, GAO released a report on school facilities indicating that things had not improved and appeared to

have grown worse (U.S. GAO 1995a). According to GAO, one-third of both elementary and secondary schools reported having one entire building in need of extensive repairs or replacement. Approximately 60 percent of schools reported that at least one building *feature* needed extensive repair, overhaul, or replacement.

The features most in need of repair, according to GAO (1995a), included heating, ventilation, air conditioning, plumbing, roofs, exterior walls, electrical power, windows, and doors. Because of this state of disrepair, 41 percent of schools reported poor energy efficiency. In addition, 50 percent of schools reported having at least one unsatisfactory environmental condition, including conditions that violate federal mandates (e.g., exposure to lead and radon gas). In addition, the decay and neglect described by GAO decreased the ability of many older school buildings to meet the proposed technology goals. In some schools, old, outdated wiring makes the use of technology for both educational and administrative purposes impossible (Hansen 1992).

Despite considerable focus on the unsuitable conditions of many of America's schools, Kozol (1991) and others (e.g., Corcoran, Walker, and White 1988; Lewis et al. 1989) highlight an important point: the condition of the nation's schools varies widely. Some schools are in poor condition as previously described, and some schools are in exceptional condition. Most schools, however, fall somewhere in the middle; they are in "adequate" or "better" overall condition (U.S. GAO 1995a). School conditions, whether poor, average, or exceptional, often vary by location (e.g., urban versus suburban) and characteristics of the community (e.g., impoverished versus wealthy). For example, GAO (1996) reported that in 1994, the largest proportion of schools reporting deficient school conditions was in central cities serving more than 50 percent minority students or 70 percent or more poor students. However, GAO (1996) also found that poor conditions exist in many rural areas; one out of every two rural schools had at least one inadequate structural or mechanical feature.

Financing School Facilities and the Cost to Bring Them Into Good Condition

Financing public education in the United States relies on the combined effort of state and local appropriations, as well as funds available from the federal government (Howell and Miller 1997). Because school facilities are funded primarily by local revenues, characteristics of the community, particularly the property tax base, are important factors contributing to the condition of schools (Lewis et al. 1989; U.S. Department of Education 1995). Because community factors tend to vary, they lead to disparity in the funding available for schools from community to community (Augenblick, Myers, and Anderson 1997; U.S. GAO 1995c; U.S. Department of Education 1995; Terman and Behrman 1997).

Disparities in funding for schools in general, and school facilities in particular, are exacerbated by the cost for providing facilities that are in good condition. There are a number of studies on school construction costs. Some of them focus on funds *spent* on school facilities; others report estimates of funds *needed* for school facilities. While each one offers a unique perspective, differences between funds spent and funds needed, and differences in the elements each study includes under school construction, make it impossible to draw direct comparisons across the studies.

The 1994 GAO study estimated that $101 billion was needed for repairs, renovations, and modernizations to bring schools' onsite buildings into good overall condition (U.S. GAO 1995a). The study also estimated that $11 billion dollars would be needed in the next 3 years to comply with various federal mandates that impact school construction, such as asbestos removal and accessibility for students with disabilities.[6]

[6] The $101 billion and the $11 billion were collected in two separate questions on the survey. However, GAO frequently presents an estimate of $112 billion needed, which they derive by summing the amounts reported in these two questions. It is possible that the $112 billion includes some duplication of money needed, since the $11 billion needed to comply with federal mandates may or may

A more recent GAO study of actual school construction expenditures included expenditures for acquired and constructed buildings, land, and equipment such as heating and air conditioning systems (U.S. GAO 2000). This study found that annual construction expenditures for public schools in the United States grew by 39 percent from fiscal years 1990 through 1997, from about $17.8 billion to about $24.7 billion after adjusting for inflation.

In another study on school construction costs, Abramson (1999) reported that public schools completed construction projects totaling $15 billion in 1998, with a projected expenditure of $17.2 billion for 1999. Of the projected spending in 1999, approximately 50 percent was to be used for new construction, 24 percent for additions, and 26 percent for renovations. With advances in technology, new construction is becoming increasingly expensive. Abramson (1999) provided data concerning the facilities that were planned for new schools constructed in 1999. While these new schools all will have the core features of cafeterias and libraries (among other features), most will have a computer lab (60 percent of elementary, 91 percent of middle, and 85 percent of high schools) and local area networks (LANs) (80 percent of elementary, 95 percent of middle, and 90 percent of high schools), and many secondary schools will have technology labs (33 percent of middle schools and 44 percent of high schools).

A recently published National Education Association (NEA) report looked at funds needed for school infrastructure and education technology (NEA 2000). In this report, school infrastructure included new school construction, additions to existing buildings, renovation, retrofitting, deferred maintenance, and major improvements to grounds. In addition, education technology included computers and peripherals, software, connectivity, networks, technology infrastructure, distance education, maintenance and repair of technology equipment, and technology-related professional development and ongoing support for teachers. Taking all of this into account, the NEA provided a cost estimate of $322 billion needed for school modernization.[7]

not have been included by respondents in the $101 billion needed to put schools into good overall condition.

Factors Contributing to School Condition

The funding of public school facilities may be important insofar as it affects the way schools address two important factors contributing to the decline of school facilities: (1) deferred maintenance and renovation, and (2) overcrowding (e.g., U.S. GAO 1995a; Hansen 1992; U.S. Department of Education 1999a).

Deferred Maintenance and Renovation

A number of reports have raised concerns about the age of America's public schools (e.g., U.S. Department of Education 1999b). Older buildings may fall into disrepair or lack the infrastructure necessary for adequate electrical and telecommunications wiring (U.S. GAO 1995b). However, age of the building, by itself, is somewhat less important than is its history of maintenance and renovation, as well as the adequacy of the original construction. Regular maintenance is critical to keeping schools in good condition.

The growing demand for new school construction, as well as choices that school districts must make about where to spend limited funds (e.g., facilities versus instructional programs), has forced many school districts to overlook the maintenance and modernization of old schools. For example, GAO (1995a) found that district officials attributed declining conditions primarily to insufficient funds, resulting from decisions to defer maintenance and repair expenditures from year to year. However, maintenance can only be deferred for a short period of time before school facilities begin to deteriorate in noticeable ways. Without regular

[7] While NEA describes the study as a 50-state report of school modernization needs, the study received usable responses about infrastructure from only 24 states, and about education technology from only 2 states. The remaining data were derived by various estimation techniques described in the report.

maintenance, equipment begins to break down, indoor air problems multiply, and buildings fall into greater disrepair (Hansen 1992). The lack of regular maintenance can also result in a host of health and safety problems, including exposure to carbon monoxide and risk of physical injuries. Additionally, deferred maintenance increases the cost of maintaining school facilities; it speeds up the deterioration of buildings and the need to replace equipment (Hansen 1992).

Overcrowding

Like deferred maintenance and renovation, overcrowding is an important topic to consider when examining the condition of school facilities. Overcrowding occurs when the number of students enrolled in the school is larger than the number of students the school was designed to accommodate. It both characterizes the condition of school facilities (e.g., the facilities are too small to accommodate the students and teachers who reside there) and contributes to the decline of these facilities (e.g., overcrowded facilities are typically overused facilities that grow old before their time). A number of recent reports indicate that overcrowding is a serious problem in many school districts (Burnett 1995; Corcoran, Walker, and White 1988; Lewis et al. 1989; Fernandez and Timpane 1995; U.S. GAO 1995a; EdSource 1998; Rivera-Batiz and Marti 1995; Lowe 1996; U.S. Department of Education 1998; U.S. Department of Education 1999a). Dramatic increases in enrollment due to the "baby-boom echo," immigration, and migration have led many schools to enroll far more students than they were designed to accommodate.[8] Compounding these conditions are initiatives to reduce class size, resulting in the need for even more classrooms.

To deal with overcrowding, school districts and schools have adopted a number of short-term solutions. For example, many have converted noninstructional space into classrooms. In such schools, students are placed in spaces never intended as classrooms, such as gymnasiums, libraries, cafeterias, and even closets (Burnett 1995). Another popular solution is portable classrooms. These temporary structures are becoming a more permanent feature of schools; some have been in use for as long as 40 years (Lewis et al. 1989). Portables are a prominent adaptation school districts are using to meet space needs; however, recent accounts suggest that they may not be a particularly suitable alternative (U.S. GAO 1995a). Findings from a recent U.S. Department of Education report (1999a) suggest that overcrowding will likely become more serious in the future and that short-term solutions, such as portable classrooms, may not be sufficient to accommodate the long-term enrollment boom that is expected over the next two decades.

The Condition of School Facilities Matters

There are many ways in which the condition of school facilities may be directly or indirectly relevant to students and their families. The issues of greatest concern surrounding the topic—as reflected in the popular press, the research literature, and courtrooms nationwide—include equal access to adequate school facilities and student safety, as well as more academic matters, such as student achievement.

As described earlier in this chapter, many states have been sued over the degree of disparity in their school facilities funding systems. For example, variations in the quality of Ohio's public school facilities have been cited as key evidence for the violation of the uniform education articles provided by the state's own constitution (e.g., *The State of Ohio v. DeRolph*, 677 N.E. 2d 733 [Ohio 1997]). The courts' interpretations of uniform education as it relates to facilities have gone beyond the right to have access to adequate facilities and materials; several courts have asserted that widely disparate school funding systems—in particular, funding for facilities—prevent students from attaining equal educational opportunities, achievement, and job opportunities (e.g., *The State of Ohio v. DeRolph*,

[8] Migration patterns (e.g., families moving out of particular areas) and decisions families make with regard to their children's schooling (e.g., private school enrollment) may also lead to a *decline* in enrollments among some public schools. These declines may result in schools that are *underenrolled*.

677 N.E. 2d 733 [Ohio 1997]; *Roosevelt Elementary School No. 66 v. Bishop*, 877 P. 2d 806 [Ariz. 1994]).

Lack of adequate school facilities may also result in conditions that compromise student safety. Students who attend schools in poor condition may be exposed to such health threats as poor air quality, hazardous materials, and sewage overflows. In more extreme cases, students may also be put in more immediate physical danger when parts of the building collapse or when safety features (e.g., fire alarms, sprinkler systems) fail. In fact, witnesses in the *Ohio v. DeRolph* case testified that arsenic was found in the drinking water of an elementary school and that chunks of plaster routinely fell from the ceilings of several schools. Similarly, GAO (1995a) documented numerous individual accounts of threats to student safety: the ceiling of an Alabama elementary school collapsed less than an hour after students had left for the day; the glass from 70-year-old windows blew into a Washington, D.C., elementary classroom during a windstorm; and many students who suffer from asthma were frequently put at risk by poor ventilation and unhealthy air quality. To compound the problem, in 1994, over 14,000 schools across the country had less than adequate life safety features, such as sprinkler systems (U.S. GAO 1995a). Therefore, dangerous conditions that may normally be prevented or controlled (e.g., fires, carbon monoxide levels) were not adequately monitored.

Many studies have explored the relationship between school conditions and achievement-related behavior (Burnett 1995; McGuffey 1982; Rivera-Batiz and Marti 1995; Weinstein 1979). For example, Earthman and Lemasters (1996) reviewed several recent studies of the influence of school conditions on academic achievement. All of the studies found the same relationship, to varying degrees, between school facilities and student achievement. That is, higher rankings of structural and mechanical (e.g., heating and cooling systems) or cosmetic conditions (e.g., how recently the walls have been painted) were correlated with higher achievement scores. This relationship was generally found to be stronger for cosmetic than structural school conditions. However, Earthman and Lemasters caution readers about the findings; they concluded that despite a large number of research studies, "it is difficult to determine any definite line of consistent findings" (p. 3). These conclusions have been supported by other researchers. For example, Ferguson (1991), in a study of school expenditures, stated that "some [of these] expenditures—particularly transportation and maintenance—have logical relationships to learning that are at best indirect" (p. 484). He concluded that "few would argue that spending more on transportation and maintenance should increase test scores, though most would agree that such spending matters" (p. 484).

Much of the research on the effects of school facilities on student achievement shares a number of general limitations. For example, many of the studies Earthman and Lemasters (1996) reviewed provided no evidence of statistical testing (e.g., Cash 1993; Earthman, Cash, and Van Berkum 1995). Another study (Berner 1993) suffers from different methodological concerns, including a sample size too small to support the analysis the author runs (e.g., a regression model with 41 cases and 9 independent variables) and control variables that are 9 years older than the variables measuring school condition and student achievement. More importantly, however, many of these research studies did not take into account a number of meaningful differences between schools in poor and good conditions that may explain the findings they report. For example, schools in poor condition may be less likely to have resources important for academic achievement, such as high-quality teachers, effective leadership, high levels of parental involvement, and more appropriate materials (e.g., laboratory equipment, textbooks). These resources, rather than the condition of the physical plant, may explain achievement differences between students in schools of various conditions.

Researchers may have had difficulty establishing a relationship between facilities and achievement because if school conditions do have an impact on student learning, their effects are likely to be indirect. Specifically, student learning is generally believed to be affected by factors such

as lost instructional time, reduced attention, and diminished curricular options that may *result from* facilities-related problems (e.g., school closings, classroom shortages, overcrowding; Duke et al. 1998; Rivera-Batiz and Marti 1995). It is difficult to detect indirect effects in the absence of detailed surveys of students and teachers and suitable measures to control for other differences between schools in poor condition and schools in good condition. However, researchers who have studied school facilities and the teaching and learning process have found some interesting relationships. For example, a survey of overcrowded schools in New York City found that 75 percent of teachers indicated that overcrowding affects classroom activities, and 70 percent of teachers indicated that overcrowding affected their instructional techniques (Rivera-Batiz and Marti 1995). Corcoran, Walker, and White (1988) found that overcrowding, as well as heavy teacher workloads, created stressful working conditions for teachers and led to higher teacher absenteeism. The survey of New York City schools mentioned earlier found that nearly 40 percent of students indicated that they had problems concentrating in their classes when they were learning something new (Rivera-Batiz and Marti 1995).

Study Methodology

The survey on the Condition of Public School Facilities was conducted through NCES' FRSS during summer and early fall 1999. The results presented in this report are based on questionnaire data for 903 public elementary and secondary schools in the United States. Information about the condition of school facilities is based on questionnaire rating scales rather than on physical observation of school conditions by outside observers. While individual schools were sampled, the questionnaires were mailed to the districts with which the schools were associated. The cover letter indicated that the survey was designed to be completed by district-level personnel who were very familiar with the school facilities in the district. The letter indicated that the respondent might want to consult with other district-level personnel or with school-level personnel, such as the principal of the selected school, in answering some of the questions. The respondent section on the front of the questionnaire indicated that while most questionnaires were completed by district-level respondents, some were completed by school-level respondents (usually the school principal). To maintain the focus on schools, which are the sampled unit, the report refers to schools indicating or reporting various findings, even though respondents were primarily district-level personnel reporting about the sampled school.

Many of the questionnaire items on the FRSS survey are taken from the 1994 GAO survey. The same questionnaire items and analysis variables were used with the intention of providing information about change in the condition of public school facilities between 1994, when GAO conducted its survey, and 1999, when NCES conducted its survey. However, the GAO information included in this report is provided as contextual information only. Statistical comparisons are not provided because GAO does not provide standard errors for the data in their reports, and exact point estimates are also missing for some comparative statements from the GAO reports.

Like the 1994 GAO study, this FRSS study also asked for an estimate of the total costs of all repairs, renovations, and modernizations required to bring the onsite buildings into good overall condition. However, for the FRSS study, schools for which the condition of any type of onsite school building *or any building feature* (e.g., roofs, plumbing) was less than good provided information about the cost of needed repairs, renovations, and modernizations. Thus, even though the wording of the cost item on the 1994 GAO and 1999 FRSS studies was the same, the two studies include costs for different things.[9]

The school characteristics used as analysis variables in this report are school instructional level, school enrollment size, locale (central city,

[9] See appendix A for additional information about the 1994 GAO cost estimate, and further discussion of comparability issues for the cost estimates between the 1994 GAO and 1999 FRSS studies.

urban fringe/large town, rural/small town), region, percent minority enrollment, and percent of students in the school eligible for free or reduced-price school lunch (which indicates the concentration of poverty in the school). These variables are defined in appendix A.

The questionnaire responses were weighted to produce national estimates that represent all regular public schools in the United States. All comparative statements in this report have been tested for statistical significance using chi-square tests or *t*-tests adjusted for multiple comparisons using the Bonferroni adjustment and are significant at the 0.05 level. Throughout this report, differences that may appear large (particularly those by school characteristics) may not be statistically significant. This is due in part to the relatively large standard errors surrounding the estimates (because of the small sample size), and the use of the Bonferroni adjustment to control for multiple comparisons. Appendix A provides a detailed discussion of the sample and survey methodology.

Organization of This Report

The chapters that follow present information about the condition of America's public schools in 1999. Specifically, chapter 2 presents information about the presence and overall condition of various types of onsite buildings, and the condition of nine different building features (e.g., roofs, plumbing). Information is also provided about the cost to put school buildings into good overall condition, and the sources of estimates for those costs. Chapter 3 reports about satisfaction with various environmental factors (e.g., heating, ventilation) in the schools' onsite buildings, and provides information about the status and satisfaction with air conditioning in various areas of the schools. Chapter 4 discusses school plans for new construction and for major repair, renovation, or replacement of building features in the next 2 years. Chapter 5 examines the issue of the age of America's public schools, including determining the age of schools, and how age relates to the condition of schools and plans for repair, renovation, and replacement. Chapter 6 presents data regarding the extent of overcrowding in public schools, the relationship between overcrowding and school condition, and various practices that schools may use to ease overcrowding. The concluding chapter summarizes the findings of this study and draws some overall conclusions about the findings. Technical information, including a detailed study methodology (appendix A) and tables of standard errors for all data presented in this report (appendix B), are included as technical appendices to the report. The questionnaire is included in appendix C.

2. CONDITION OF PUBLIC SCHOOLS

The condition of public schools has received a lot of attention from various stakeholders in the educational process, including parents, educators, and policymakers at various levels. This chapter presents information about the condition of America's schools in 1999, including the presence and overall condition of various types of onsite buildings, and the condition of nine different building features (e.g., roofs, plumbing). Information is also provided about the cost to put school buildings into good overall condition, and the sources of estimates for those costs.

Presence and Overall Condition of Onsite Buildings

This study collected information about the overall condition of the original buildings, the attached and/or detached permanent additions, and the temporary buildings[10] on site at the school. Overall condition includes both physical condition and the ability of the building to meet the functional requirements of instructional programs. The rating scale used (see exhibit 1) indicated the amount of maintenance and repair required for that type of building at the school, and included the following categories: excellent, good, adequate, fair, poor, and replace.[11]

Virtually all of the approximately 78,300 regular public schools had original buildings,[12] and two-thirds of the schools had attached and/or detached permanent additions (table 1). Temporary buildings were less prevalent, with 39 percent of the schools indicating that they had temporary buildings. The overall condition of the various types of buildings generally was perceived to be positive, with 81 percent of schools reporting their original buildings to be in adequate or better condition, 84 percent of those having permanent additions reporting them to be in adequate or better condition, and 81 percent of those having temporary buildings reporting them to be in adequate or better condition.[13] Permanent additions were somewhat more likely than original or temporary buildings to be in excellent condition, and temporary buildings were somewhat more likely than original buildings and permanent additions to be in adequate condition.

Although a majority of schools reported their original buildings, permanent additions, and temporary buildings to be in adequate or better condition, about a fifth of schools having a particular type of building reported them to be in less than adequate condition (table 1). That is, 19 percent of schools reported their original buildings to be in less than adequate condition, 16 percent of those having permanent additions reported them as less than adequate, and 19

[10] Examples of onsite temporary buildings include portables, demountables (which are prefabricated buildings assembled on site that are not intended to have a long useful life), trailers, and Quonset huts. Temporary buildings are not necessarily poor-quality space. The quality of temporary buildings depends on many of the same factors as the quality of original buildings and permanent additions, including the age of the building, the type of building it is, ongoing maintenance of the building, and the infrastructure to support it (e.g., adequate heating, ventilation, and air conditioning). In some cases, new temporary buildings may be preferred by students and teachers over older permanent space (for example, see Mathews 2000).

[11] This questionnaire item was drawn from the 1994 GAO study.

[12] While this question was designed by GAO with the assumption that all schools would have original buildings, it was discovered during data collection on the FRSS survey that a few schools have removed old original buildings and left in place detached permanent additions that were added over the years. In addition, a few schools are composed entirely of temporary buildings. The data entry system on the FRSS survey was modified to allow schools to indicate that they do not have original buildings.

[13] Ratings of adequate or better encompass the ratings of excellent, good, and adequate. Ratings of less than adequate encompass the ratings of fair, poor, and replace. See exhibit 1 for the definitions associated with the rating scale.

Exhibit 1.—Scale used to rate the overall condition of onsite buildings and the physical condition of various building features: 1999

Excellent: new or easily restorable to "like new" condition; only minimal routine maintenance required.

Good: only routine maintenance or minor repair required.

Adequate: some preventative maintenance and/or corrective repair required.

Fair: fails to meet code and functional requirement in some cases; failure(s) are inconvenient; extensive corrective maintenance and repair required.

Poor: consistent substandard performance; failure(s) are disruptive and costly; fails most code and functional requirements; requires constant attention, renovation, or replacement. Major corrective repair or overhaul required.

Replace: Non-operational or significantly substandard performance. Replacement required.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, Survey on the Condition of Public School Facilities, 1999.

Table 1.—Percent of public schools with each type of building, and the percentage distribution of ratings of the overall condition of the building types: 1999

Type of building	School has building type	Overall condition[1]							
		Adequate or better				Less than adequate			
		Total	Excellent	Good	Adequate	Total	Fair	Poor	Replace
Original buildings.....	[2]100	81	16	38	26	19	13	5	2
Permanent additions..	67	84	24	36	24	16	11	4	[3]1
Temporary buildings.	39	81	11	37	33	19	12	6	1

[1]Based on schools with that type of building.

[2]Rounds to 100 percent for presentation in the table.

[3]Coefficient of variation greater than 50 percent.

NOTE: Details may not sum to totals because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, Survey on the Condition of Public School Facilities, 1999.

percent of schools having temporary buildings reported them to be in less than adequate condition.[14] This included 4 to 6 percent reporting buildings in poor condition (defined as consistent substandard performance; see exhibit 1), and 1 to 2 percent reporting that buildings needed to be replaced due to significantly substandard performance or non-operational condition.

The presence and condition of original buildings did not vary significantly by school characteristics[15] (table 2). The presence of permanent

[14] For comparison purposes, GAO reported for 1994 that 26 percent of schools reported that their original buildings were in less than adequate condition, 18 percent of schools reported their permanent additions in less than adequate condition, and 28 percent of schools reported that their temporary buildings were in less than adequate condition (U.S. GAO 1995a).

[15] The school characteristics used as analysis variables in this report are school instructional level, school enrollment size, locale (central city, urban fringe/large town, rural/small town), region, percent minority enrollment, and percent of students in the school eligible for free or reduced-price school lunch (which indicates the concentration of poverty in the school). These variables are defined in appendix A. Throughout this report, differences (particularly those by school characteristics) that may appear large may not be statistically significant. This is due in part to the relatively large standard errors surrounding the estimates (because of the small sample size and the high variability on some of the responses), and the use of the Bonferroni adjustment to control for multiple comparisons. Standard errors and the Bonferroni

additions varied slightly by region, with schools in the Northeast less likely to have permanent additions than schools in the South or the West (55 percent compared with 71 percent and 69 percent, respectively). Among schools having permanent additions, schools with the highest concentration of poverty (defined here as 70 percent or more of the students eligible for free or reduced-price school lunch) were more likely to report that their permanent additions were in less than adequate condition than were schools with 20 to 39 percent or schools with less than 20 percent of their students eligible for free or reduced-price school lunch (30 percent versus 13 percent and 8 percent, respectively).

The presence of temporary buildings showed somewhat more variation by school characteristics (table 2). Schools in central cities and in urban fringe areas and large towns were more likely to have temporary buildings than were schools in rural areas and small towns (45 percent and 44 percent, respectively, compared with 29 percent). About a fifth of schools in the Northeast and Midwest had temporary buildings, compared with 49 percent in the South and 65 percent in the West. Schools with the lowest minority enrollment were less likely to have temporary buildings than were schools with higher minority enrollment (25 percent compared with 39 to 51 percent). The condition of temporary buildings did not vary significantly by school characteristics.[16]

Differences in the presence of temporary buildings may be related to differences in public school enrollment growth. According to a 1999 report by the U.S. Department of Education (1999a), the West and the South led the nation in school enrollment growth, and cities and suburbs both experienced substantial school enrollment growth in the last 10 years. Enrollment growth in the West was particularly notable, increasing 26 percent from 1989 to 1999. During this time period, public school enrollment grew by 16 percent in the South, 14 percent in the Northeast, and 10 percent in the Midwest.

Looking across all the types of onsite buildings, 76 percent of the schools overall reported that all the types of onsite buildings at their school were in adequate or better condition (table 3). This did not vary significantly by school characteristics (not shown in tables). Approximately 34 million students attended the estimated 59,500 schools that reported all building types in adequate or better condition (table 3). The remaining 24 percent of schools reported that at least one of their types of onsite buildings was in less than adequate condition. These 18,700 schools enrolled approximately 11 million students. Approximately 3.5 million of these students attended schools where at least one type of building was in poor condition (defined as consistent substandard performance) or needed to be replaced because it was non-operational or showed significantly substandard performance (not shown in tables).[17]

adjustment are discussed in the section on variances in appendix A. In addition, GAO reports more differences by school characteristics than are found in this study. This is discussed in appendix A in the section on comparisons to the GAO study.

[16] It is important to keep in mind the wide range in the prevalence of temporary buildings when examining the ratings of their overall condition. For example, the condition ratings for temporary buildings in schools with the lowest minority enrollment are based on the 25 percent of low minority enrollment schools that have such buildings, compared with the ratings for schools with the highest minority enrollment, which are based on the 51 percent of high minority enrollment schools that have such buildings. These differences in prevalence influence the likelihood that ratings of their condition will be significantly different.

[17] GAO reported for 1994 that for all types of buildings, two-thirds of the nation's schools were in adequate or better condition, needing at most only some preventive maintenance or corrective repair (U.S. GAO 1995a). They estimated that approximately 14 million students attended the estimated 25,000 schools in which at least one type of building was in less than adequate condition, needing extensive repair or replacement.

Table 2.—Percent of public schools with each type of building, and the percent rating each building type in less than adequate condition, by school characteristics: 1999

School characteristic	Original buildings		Permanent additions		Temporary buildings	
	School has building type	Less than adequate condition[1]	School has building type	Less than adequate condition[1]	School has building type	Less than adequate condition[1]
All public schools	[2]100	19	67	16	39	19
School instructional level						
Elementary school	[2]100	19	64	17	40	18
High school	99	21	74	14	37	21
Combined	100	[3]10	92	[3]11	27	—
School enrollment size						
Less than 300	99	22	64	16	21	—
300 to 599	100	19	70	17	39	22
600 or more	[2]100	18	65	14	50	20
Locale						
Central city	100	20	62	18	45	19
Urban fringe/large town	100	18	66	17	44	18
Rural/small town	99	19	71	14	29	19
Region						
Northeast	100	17	55	11	20	—
Midwest	100	20	67	12	19	22
South	100	16	71	17	49	19
West	99	25	69	22	65	20
Percent minority enrollment						
5 percent or less	99	19	68	11	25	12
6 to 20 percent	[2]100	18	70	14	39	22
21 to 50 percent	100	16	62	16	44	14
More than 50 percent	100	23	67	24	51	24
Percent of students in school eligible for free or reduced-price school lunch						
Less than 20 percent	99	20	63	8	35	17
20 to 39 percent	100	18	64	13	36	16
40 to 69 percent	100	16	74	16	42	19
70 percent or more	100	25	65	30	43	25

— Too few cases for a reliable estimate.

[1]Based on schools with that type of building. Ratings of less than adequate encompass the ratings of fair, poor, and replace.

[2]Rounds to 100 percent for presentation in the table.

[3]Coefficient of variation greater than 50 percent.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, Survey on the Condition of Public School Facilities, 1999.

Table 3.—Number and percentage distributions of public schools and enrollments according to the condition of all onsite building types: 1999

Condition of all onsite building types	Schools		Students	
	Percentage distribution	Number	Percentage distribution	Number
All public schools	100	78,300	100	45,000,000
Schools with all building types in adequate or better condition[1]	76	59,500	76	34,000,000
Schools with at least one type of building in less than adequate condition[2]	24	18,700	24	11,000,000

[1]Ratings of adequate or better encompass the ratings of excellent, good, and adequate.

[2]Ratings of less than adequate encompass the ratings of fair, poor, and replace.

NOTE: Percentages are computed within each column, and are computed on unrounded numbers. The numbers of schools have been rounded to the nearest hundred, and the numbers of students have been rounded to the nearest million. Details may not sum to totals because of rounding. The condition of all onsite building types is computed across original buildings, permanent additions, and temporary buildings.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, Survey on the Condition of Public School Facilities, 1999.

Condition of Building Features

The questionnaire asked for ratings of the condition of nine different building features (e.g., roofs, plumbing) for the school's onsite buildings, using the same scale used to rate building types (see exhibit 1).[18] While the majority of public schools reported that the individual building features at their schools were in adequate or better condition, a sizable minority (ranging from 14 percent to 29 percent) indicated that various individual building features were in less than adequate condition[19] (table 4). About one in seven schools reported that their framing, floors, and foundations were in less than adequate condition, and about one in six schools reported interior finishes and trim, and electrical lighting to be in less than adequate condition. Approximately a fifth of schools indicated less than adequate conditions for life safety features, roofs, and electric power, and about a quarter of schools reported less than adequate conditions for plumbing, and for exterior walls, finishes, windows, and doors. Heating, ventilation, and air conditioning systems were reported to be in less than adequate condition at 29 percent of schools.

The condition of various building features showed some variation by school characteristics[20] (table 4). Schools with the highest concentration of poverty (as defined by the percentage of students eligible for free or reduced-price school lunch) were more likely than schools with the lowest concentration of poverty to report that their roofs were in less than adequate condition (32 percent versus 18 percent). Schools with more than 50 percent minority enrollment were more likely than schools with lower minority enrollment to indicate that their electric power was in less than adequate condition (32 percent compared with 18 percent and 19 percent), and were more likely than schools with 21 to 50 percent minority enrollment to report that their exterior walls, finishes, windows, and doors were in less than adequate condition (29 percent compared with 17 percent). Schools in the West

[18] This questionnaire item is drawn from the 1994 GAO study. The previous section of this report discussed types of onsite buildings (original buildings, attached and/or detached permanent additions, and temporary buildings). This section of the report discusses nine different building features (e.g., roofs, plumbing) of those onsite buildings. While the overall condition of building types may be adequate or better, the condition of individual building features may be less than adequate.

[19] As in the previous section, the ratings of excellent, good, and adequate have been combined into a rating of adequate or better, and ratings of fair, poor, and replace have been combined into a rating of less than adequate.

[20] As noted previously, differences that may appear large may not be statistically significant, due in part to the relatively large standard errors surrounding the estimates (because of the small sample size) and the use of the Bonferroni adjustment. These are discussed further in appendix A.

Table 4.—Percent of public schools rating the condition of building features as less than adequate, by school characteristics: 1999

School characteristic	At least one building feature is in less than adequate condition	Roofs	Framing, floors, foundations	Exterior walls, finishes, windows, doors	Interior finishes, trim	Plumbing	Heating, ventilation, air conditioning	Electric power	Electrical lighting	Life safety features
All public schools	50	22	14	24	17	25	29	22	17	20
School instructional level										
Elementary school	49	22	14	23	17	24	28	21	17	19
High school	56	26	16	27	20	28	34	25	19	22
Combined	54	18	15	31	14	25	34	20	20	29
School enrollment size										
Less than 300	55	24	19	31	20	28	29	23	19	26
300 to 599	50	22	12	21	16	27	32	21	17	21
600 or more	49	22	14	23	18	20	26	22	16	16
Locale										
Central city	56	23	12	27	20	28	30	26	18	21
Urban fringe/large town	44	19	13	21	16	21	27	21	15	17
Rural/small town	52	25	17	25	17	26	31	19	20	23
Region										
Northeast	39	16	10	18	14	19	22	14	10	11
Midwest	51	20	15	28	15	25	27	19	15	19
South	51	25	15	22	16	24	28	22	20	22
West	57	27	16	26	25	32	40	32	22	27
Percent minority enrollment										
5 percent or less	48	21	15	26	14	22	28	18	16	18
6 to 20 percent	49	25	15	23	17	26	29	18	16	22
21 to 50 percent	46	17	12	17	14	23	25	19	15	18
More than 50 percent	59	28	14	29	24	29	34	32	23	24
Percent of students in school eligible for free or reduced-price school lunch										
Less than 20 percent	45	18	14	21	17	23	28	18	14	16
20 to 39 percent	45	21	11	21	14	23	26	20	15	18
40 to 69 percent	53	22	16	25	14	23	29	21	18	22
70 percent or more	63	32	17	30	26	32	35	30	24	27

NOTE: Ratings of less than adequate encompass the ratings of fair, poor, and replace.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, Survey on the Condition of Public School Facilities, 1999.

were more likely than schools in the Northeast and Midwest to indicate that their interior finishes and trim and their electric power were in less than adequate condition (25 percent compared with 14 percent and 15 percent, and 32 percent compared with 14 percent and 19 percent, respectively). Schools in the West were more likely than schools in the Northeast to report that their heating, ventilation, and air conditioning systems and their life safety features (e.g., sprinklers, fire alarms) were in less than adequate condition (40 percent compared with 22 percent, and 27 percent compared with 11 percent, respectively).

Looking across all of the building features, 50 percent of the schools overall reported that at least one of the nine building features at their school was in less than adequate condition (table 4). This translates into about 39,500 schools reporting at least one less than adequate building feature (not shown in tables). Schools in central cities were more likely than schools in urban fringe areas and large towns to report at least one building feature as less than adequate (56 percent compared with 44 percent; table 4). Schools in the West were more likely than schools in the Northeast to report at least one building feature as less than adequate (57 percent compared with 39 percent). Schools with the highest concentration of poverty (defined here as 70 percent or more of the students eligible for free or reduced-price school lunch) were more likely to report that at least one building feature was in less than adequate condition than were schools with 20 to 39 percent or schools with less than 20 percent of their students eligible for free or reduced-price school lunch (63 percent versus 45 percent each).

Among the 50 percent of schools with at least one of the nine building features in less than adequate condition, an average of 3.8 building features were reported to be in less than adequate condition (not shown in tables). Figure 1 shows the percentage distribution of the number of building features in less than adequate condition at these schools. About a quarter of these schools reported that one building feature was in less than adequate condition, 16 percent reported two building features in this condition, and 15 percent reported three building features in less than adequate condition. At the other end of the distribution, 7 percent of these schools reported that all nine building features were in less than adequate condition.[21]

Costs to Bring Schools Into Good Overall Condition

The questionnaire also asked for an estimate of what would probably be the total cost of all repairs, renovations, and modernizations required to put the school's onsite buildings in good overall condition.[22] Schools that reported on the questionnaire that the condition of any type of building (original building, permanent addition, or temporary building) or any building feature (e.g., roofs, plumbing, electric power) was less than good (i.e., any type of building or building feature was given a rating of adequate, fair, poor, or replace) provided information about the cost of the needed repairs, renovations, and modernizations.[23]

Overall, 76 percent of schools indicated in 1999 that they would need to spend some money on repairs, renovations, or modernizations to bring the school into good overall condition (table 5). This translates into approximately 59,400 schools needing to spend money on repairs, renovations, or modernizations to put the school into good overall condition (not shown in tables). Schools located in central cities were more likely to need to spend money than were schools in urban fringe

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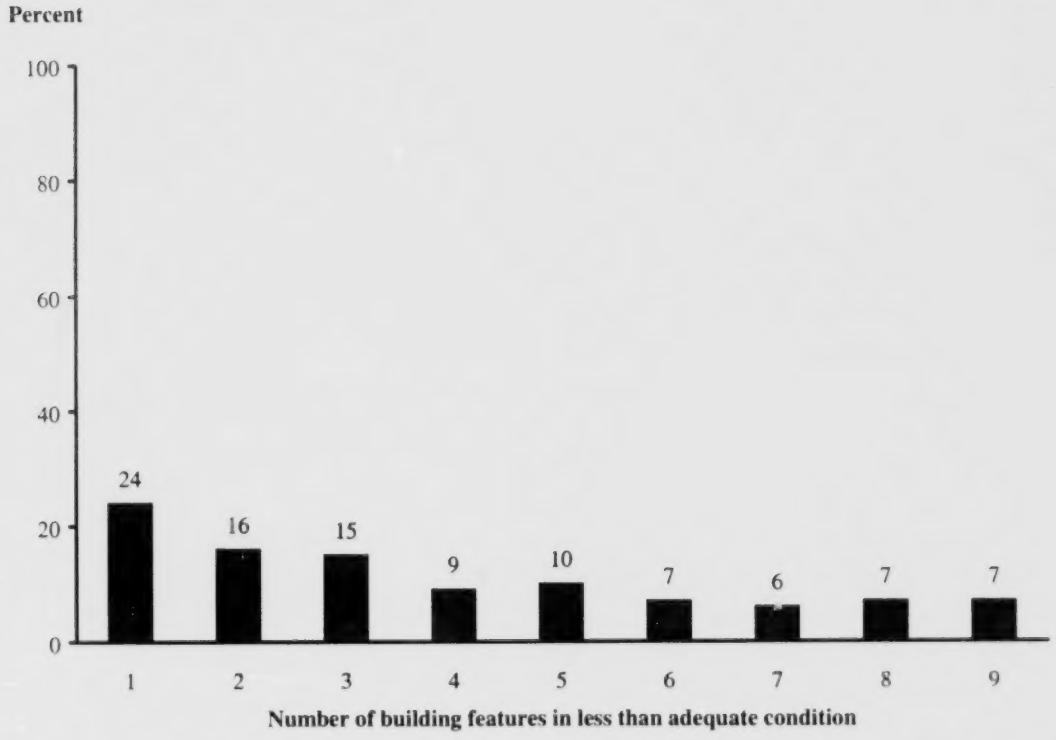
[21] GAO reported for 1994 that about 60 percent of schools reported at least one building feature in less than adequate condition, and three-quarters of those schools had more than one building feature in less than adequate condition (U.S. GAO 1995a).

[22] See exhibit 1 for the definition associated with good condition.

[23] The wording of the cost item on the questionnaire was taken from the 1994 GAO study. However, the GAO study asked about the condition of the types of onsite buildings, followed by the question about the cost to bring the onsite buildings into good overall condition. The question about the condition of various building features was asked several pages later in the GAO study. Thus, even though the wording of the cost question was the same in the GAO and FRSS studies, the two studies may include costs for different things, since respondents to the GAO study were not prompted to include costs associated with building features. See appendix A for information about the 1994 GAO cost estimate and further discussion of comparability issues for the cost estimates between the 1994 GAO and 1999 FRSS studies.

Figure 1.—Percentage distribution of public schools with at least one building feature in less than adequate condition according to the number of building features that are in less than adequate condition: 1999



NOTE: Percentages are based on the 50 percent of schools with at least one building feature in less than adequate condition. Percentages may not sum to 100 because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, Survey on the Condition of Public School Facilities, 1999.

areas or large towns (81 percent compared with 70 percent; table 5). Schools in the West were more likely to report the need to spend money than were schools in the South or in the Northeast (83 percent compared with 73 and 70 percent, respectively).[24] For schools that indicated the need to spend money to bring the school into good overall condition, the total amount needed by all schools was estimated to be approximately $127 billion (not shown in tables). The average dollar amount for schools needing to spend money was about $2.2 million per school (not shown in tables).

The average cost per student of repairs, renovations, and modernizations to put schools into good overall condition also is shown in table 5. The average cost per student across all public schools, including those that did not need to spend money to put the school into good overall condition, was $2,900. Among the 76 percent of schools that reported needing to spend money to put the school into good overall condition, the average cost per student was $3,800. Apparent differences in cost per student by school characteristics were not statistically significant.[25]

[24] Other differences that may appear large are not statistically significant. This is due in part to the relatively large standard errors surrounding the estimates (because of the small sample size) and the use of the Bonferroni adjustment. See appendix A for a discussion of these issues.

[25] Because of the large standard errors surrounding the estimates of cost per student, differences that may appear large are not statistically significant.

Table 5.—Percent of public schools reporting the need to spend money on repairs, renovations, and modernizations to bring the school into good overall condition, and the cost per student of the repairs, renovations, and modernizations, by school characteristics: 1999

School characteristic	Percent of schools reporting needing to spend	Cost per student[1]	Cost per student at schools needing to spend money[2]
All public schools	76	$2,900	$3,800
School instructional level			
Elementary school	75	2,500	3,500
High school	79	3,400	4,300
Combined	83	5,400	6,100
School enrollment size			
Less than 300	82	3,900	4,800
300 to 599	74	3,300	4,600
600 or more	74	2,500	3,300
Locale			
Central city	81	2,900	3,500
Urban fringe/large town	70	2,600	3,800
Rural/small town	78	3,300	4,400
Region			
Northeast	70	3,800	5,300
Midwest	78	2,900	3,800
South	73	2,200	3,100
West	83	3,200	3,900
Percent minority enrollment			
5 percent or less	74	3,300	4,900
6 to 20 percent	74	2,400	3,200
21 to 50 percent	73	3,100	4,200
More than 50 percent	82	2,700	3,200
Percent of students in school eligible for free or reduced-price school lunch			
Less than 20 percent	73	2,900	4,100
20 to 39 percent	73	2,800	3,900
40 to 69 percent	77	3,000	3,900
70 percent or more	84	2,600	3,200

[1]Cost calculation based on all public schools.

[2]Cost calculation based on the 76 percent of public schools that reported needing to spend money to put the school into good overall condition.

NOTE: The cost per student has been rounded to the nearest hundred.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, Survey on the Condition of Public School Facilities, 1999.

Sources of Cost Estimates

The questionnaire also asked for the sources of the cost estimates for the needed repairs, renovations, and modernizations. Respondents could indicate more than one source for their cost estimate.[26] Among the 76 percent of schools that reported needing to spend money, 59 percent reported that the estimate was at least partially based upon the best professional judgment of the respondent, 42 percent indicated that the estimate was at least partially based upon a capital improvement or facilities master plan, schedule, or budget, and 39 percent indicated that the estimate was at least partially based upon facilities assessments or inspections performed by a licensed professional in the past 3 years (table 6). Approximately one-quarter of the schools (27 percent) indicated that the estimate was at least partially based on repair, renovation, or modernization work currently under way or under contract. Finally, 16 percent of respondents indicated that the estimated cost was at least partially based upon the opinions of other school district administrators, and 4 percent indicated other sources of the estimates.

The sources of the cost estimates were also examined by whether the cost estimate for the repairs, renovations, and modernizations was based on professional judgment and opinions only, on written documents only, or on a combination of these types of sources.[27] Overall, 58 percent of schools needing to spend money based their cost estimate only on professional judgment and opinions, 36 percent based it on written documents only, and 7 percent used a combination of these types of sources (table 7). The estimated average dollar amount for schools needing to spend money varied by the source of the cost estimate. Schools at which the cost estimate was based on written documents only had a higher average cost per school for the repairs, renovations, and modernizations than did schools at which the cost estimate was based on professional judgment or opinions only ($3,202,000 compared with $1,497,000). One possible explanation for this is that respondents for schools at which the cost estimate was based on professional judgment or opinions only have underestimated the likely cost of the repairs, renovations, and modernizations. Another possible explanation is that schools that need more extensive repair, renovation, or modernization (and thus would need to spend more money) are more likely than schools that need less extensive work to have obtained written documents that show what the likely cost of the work will be.

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[26] This questionnaire item is from the 1994 GAO study. However, GAO does not report data from this question in any of their reports.

[27] The category of professional judgment and opinions only included the categories of best professional judgment of the respondent and opinions of other district or school administrators. The category of written documents only included the categories of capital improvement/facilities master plan, schedule or budget, facilities inspections/assessments performed within the last 3 years by licensed professionals, and repair/renovation, modernization work already being performed and/or contracted for. The category of combination of types of sources included using at least one source that was professional judgment or opinion and at least one source that was a written document.

Table 6.—Percent of public schools indicating the sources of cost estimates for all repairs, renovations, and modernizations required to bring the school's onsite buildings into good overall condition: 1999

Source of cost estimate	Percent
Best professional judgment of the respondent	59
Capital improvement/facilities master plan, schedule, or budget	42
Facilities inspections/assessments performed within the last 3 years by licensed professionals	39
Repair/renovation, modernization work already being performed and/or contracted for	27
Opinions of other district or school administrators	16
Other sources	4

NOTE: Based on the 76 percent of schools that reported needing to spend money to put the school into good overall condition. Percentages sum to more than 100 percent because a school could indicate more than one source for its cost estimate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, Survey on the Condition of Public School Facilities, 1999.

Table 7.—Percentage distribution of public schools indicating the type of source used for cost estimates and the average cost per school for all repairs, renovations, and modernizations required to bring the school's onsite buildings into good overall condition: 1999

Types of source for cost estimate	Percent of schools	Average cost per school
Professional judgment and opinions only[1]	58	$1,497,000
Written documents only[2]	36	3,202,000
Combination of types of sources[3]	7	2,284,000

[1]The category of professional judgment and opinions only included the categories of best professional judgment of the respondent and opinions of other district or school administrators.

[2]The category of written documents only included the categories of capital improvement/facilities master plan, schedule or budget, facilities inspections/assessments performed within the last 3 years by licensed professionals, and repair/renovation, modernization work already being performed and/or contracted for.

[3]The category of combination of types of sources included using at least one source that was professional judgment or opinion and at least one source that was a written document.

NOTE: Based on the 76 percent of schools that reported needing to spend money to put the school into good overall condition. Percentages may not sum to 100 because of rounding. The average cost per school was rounded to the nearest thousand.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, Survey on the Condition of Public School Facilities, 1999.

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3. ENVIRONMENTAL CONDITIONS

Environmental conditions, such as heating, ventilation, and air conditioning, are important aspects of the day-to-day environment for students. This chapter provides information about satisfaction with various environmental conditions in public school buildings. The conditions rated included lighting, heating, ventilation, indoor air quality, acoustics or noise control, and physical security of buildings. Also included is information about satisfaction with the flexibility of instructional space at the school and the energy efficiency of the school. In addition, information is provided about the status and satisfaction with air conditioning in various areas of the school, with particular focus on air conditioning in classrooms. Information is also provided about school closures due to facilities problems.

Satisfaction with Environmental Conditions

The questionnaire asked for ratings of how satisfactory or unsatisfactory six different environmental conditions were in the school's onsite buildings.[28] While the majority of public schools reported that the individual environmental conditions in their schools were satisfactory, a sizable minority (ranging from 12 percent to 26 percent) reported that various individual environmental conditions were unsatisfactory[29] (table 8). Ventilation was rated as unsatisfactory by more schools than any other environmental condition (26 percent). Ratings of other environmental conditions included 12 percent of schools reporting they were unsatisfied with lighting conditions, and about a fifth of schools indicating they were unsatisfied with heating, indoor air quality, acoustics or noise control, and the physical security of buildings.

Satisfaction with individual environmental conditions showed some variation by school characteristics, with three of the six environmental conditions showing significant differences[30] (table 8). For ventilation, a larger percentage of medium than large schools were unsatisfied (31 percent compared with 21 percent), and schools in the West were more likely to be unsatisfied than schools in the South (37 percent versus 19 percent). For acoustics or noise control, more medium than large schools reported being unsatisfied (19 percent compared with 12 percent), and schools in rural areas and small towns were more unsatisfied than schools in urban fringe areas and large towns (21 percent versus 13 percent). Physical security of buildings was perceived as more unsatisfactory by high schools than by elementary schools (26 percent versus 17 percent), and schools in rural areas and

[28] This questionnaire item was drawn from the 1994 GAO study. The FRSS questionnaire referred to these conditions as environmental factors, following the wording of the GAO questionnaire. The list of environmental factors on the questionnaire also included flexibility of instructional space and energy efficiency. Information about these two factors is presented separately. Some of the building features for which schools were asked to rate the physical condition on the questionnaire (e.g., heating, lighting; see chapter 2 of this report) are related to the environmental factors for which schools were asked to rate their satisfaction. Both items on the FRSS questionnaire were taken directly from the GAO questionnaire, with the intention of providing information about change in the condition of public school facilities between 1994 and 1999. Information from the GAO study is provided as contextual information only, rather than as statistical comparisons. Standard errors are not available for the GAO data, and exact point estimates are also missing for some comparative statements from the GAO reports.

[29] The ratings of satisfactory and very satisfactory have been combined into a rating of satisfactory, and the ratings of unsatisfactory and very unsatisfactory have been combined into a rating of unsatisfactory. The satisfaction ratings do not have the same kind of explicit definitions that the ratings used for the condition of buildings and building features have. Those ratings (excellent, good, adequate, fair, poor, replace) were defined to indicate the amount of maintenance and repair required.

[30] As noted previously, differences that may appear large may not be statistically significant, due in part to the relatively large standard errors surrounding the estimates (because of the small sample size) and the use of the Bonferroni adjustment. These are discussed further in appendix A.

Table 8.—Percent of public schools rating the condition of environmental factors as unsatisfactory, by school characteristics: 1999

School characteristic	At least one environmental factor is in unsatisfactory condition	Lighting	Heating	Ventilation	Indoor air quality	Acoustics or noise control	Physical security of buildings
All public schools	43	12	17	26	18	18	20
School instructional level							
Elementary school	41	12	16	25	18	17	17
High school	48	12	19	31	18	20	26
Combined	65	19	28	35	19	26	38
School enrollment size							
Less than 300	45	12	16	27	19	22	21
300 to 599	46	14	18	31	20	19	21
600 or more	39	10	16	21	16	12	18
Locale							
Central city	47	14	18	30	22	20	14
Urban fringe/large town	37	11	16	20	13	13	17
Rural/small town	47	12	16	29	21	21	26
Region							
Northeast	37	9	13	23	13	16	19
Midwest	47	13	14	29	22	19	22
South	39	11	15	19	15	16	19
West	49	14	27	37	22	20	18
Percent minority enrollment							
5 percent or less	45	11	14	29	20	20	26
6 to 20 percent	41	11	20	24	16	17	17
21 to 50 percent	37	9	16	24	17	13	17
More than 50 percent	48	16	18	27	20	20	16
Percent of students in school eligible for free or reduced-price school lunch							
Less than 20 percent	38	8	17	24	14	14	17
20 to 39 percent	42	13	15	29	20	18	22
40 to 69 percent	41	10	18	24	17	15	21
70 percent or more	55	19	18	29	24	25	17

NOTE: Ratings of unsatisfactory include the ratings of unsatisfactory and very unsatisfactory.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, Survey on the Condition of Public School Facilities, 1999.

small towns were more unsatisfied with physical security than schools in central cities and in urban fringe areas and large towns (26 percent compared with 14 percent and 17 percent).

Overall, 43 percent of the schools reported that at least one of the six environmental factors was in unsatisfactory condition (table 8). This translates into about 33,800 schools reporting at least one unsatisfactory environmental condition (not shown in tables). Schools in rural areas and small

towns were more likely than schools in urban fringe areas and large towns to report that at least one of their environmental conditions was unsatisfactory (47 percent compared with 37 percent; table 8). The apparent difference between schools in central cities and schools located in urban fringe areas and large towns is not statistically significant on this measure, due in part to the relatively large standard error for schools in central cities. Schools with the highest concentration of poverty (defined as 70 percent or more of the students eligible for free or reduced-price school lunch) were more likely to report that at least one environmental condition was unsatisfactory than were schools with the lowest concentration of poverty (55 percent compared with 38 percent).

Among the 43 percent of schools with at least one of the six environmental conditions reported as unsatisfactory, an average of 2.6 environmental conditions were reported to be unsatisfactory (not shown in tables). Figure 2 shows the percentage distribution of the number of environmental factors in unsatisfactory condition at these schools. About a third of these schools (32 percent) reported that one environmental condition was unsatisfactory, and an additional 30 percent reported two environmental conditions as unsatisfactory. At the other end of the distribution, 8 percent of the schools reported that all six environmental factors were in unsatisfactory condition.[31]

Energy Efficiency and the Flexibility of Instructional Space

The questionnaire also asked about satisfaction with the energy efficiency of the school, and with the flexibility of instructional space at the school. About a third of the schools (32 percent) were unsatisfied with the energy efficiency of the school, and 38 percent were unsatisfied with the flexibility of instructional space at the school (not shown in tables). These ratings did not vary significantly by school characteristics.[32]

Air Conditioning

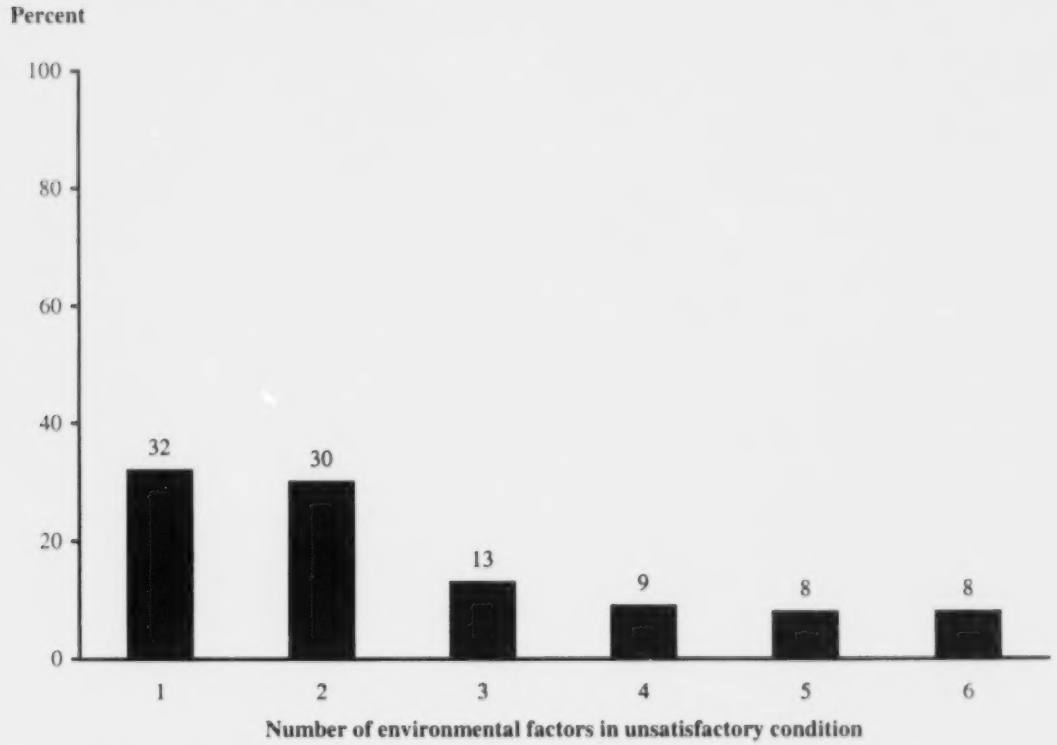
The questionnaire asked about the status of air conditioning in classrooms, administrative offices, computer labs, media centers, and "other areas" of the school. Respondents were asked to indicate whether the area did not have air conditioning because it was not needed, the area did not have air conditioning but it was needed, or that some, most, or all of the area was air-conditioned. Air conditioning was not available but needed by roughly a quarter of the schools for their classrooms (24 percent), media centers (23 percent), and other school areas (28 percent), by 17 percent of schools for their computer labs, and by 10 percent for their administrative offices (table 9). About half (49 percent) of the schools indicated that all of their classrooms were air-conditioned, about 60 percent indicated that all of their administrative offices, computer labs, and media centers were air-conditioned, and 36 percent indicated that all of the other areas of the school were air-conditioned. An additional 10 percent of schools indicated that some classrooms were air-conditioned, and 4 percent indicated that most classrooms were air-conditioned, for a total of 63 percent of schools indicating that their classrooms were all or partially air-conditioned (see tables 9 and 11). A total of 83 percent of schools reported that their administrative offices were all or partially air-conditioned.

Air conditioning in classrooms is important in many areas of the country in terms of the day-to-day learning environment for students, since more time is spent in classrooms than in other areas of the schools, such as computer labs and media centers. While overall 24 percent of the schools said that their classrooms were not air-conditioned but needed to be, some types of schools were more likely than others to indicate

[31] GAO reported for 1994 that about 50 percent of schools reported that at least one of the six environmental conditions was unsatisfactory, and 33 percent reported multiple unsatisfactory conditions (U.S. GAO 1995a).

[32] GAO reported for 1994 that 41 percent of schools were unsatisfied with the energy efficiency of the school, and 54 percent of schools were unsatisfied with their flexibility of instructional space (U.S. GAO 1995b).

Figure 2.—Percentage distribution of public schools with at least one environmental factor in unsatisfactory condition according to the number of environmental factors that are in unsatisfactory condition: 1999



NOTE: Percentages are based on the 43 percent of schools with at least one environmental factor in unsatisfactory condition.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, Survey on the Condition of Public School Facilities, 1999.

Table 9.—Percentage distribution of public schools according to the status of air conditioning in various areas of their school buildings: 1999

Area	None air-conditioned because not needed	None air-conditioned, but needed	Some air-conditioned	Mostly air-conditioned	All air-conditioned
Classrooms	13	24	10	4	49
Administrative offices	6	10	12	10	61
Computer labs	9	17	8	7	60
Media centers	10	23	3	5	59
Other areas	15	28	11	9	36

NOTE: Percentages are computed across each row, but may not sum to 100 because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, Survey on the Condition of Public School Facilities, 1999.

Table 10.—Percentage distribution of public schools according to the status of air conditioning in classrooms, by school characteristics: 1999

School characteristic	None air-conditioned because not needed	None air-conditioned, but needed	Some air-conditioned	Mostly air-conditioned	All air-conditioned
All public schools	13	24	10	4	49
School instructional level					
Elementary school	14	24	9	3	50
High school	8	25	14	6	48
Combined	20	36	*3	*11	31
School enrollment size					
Less than 300	17	31	5	6	41
300 to 599	17	27	9	*2	45
600 or more	6	16	14	5	58
Locale					
Central city	8	24	10	2	55
Urban fringe/large town	14	23	11	4	49
Rural/small town	16	25	8	5	45
Region					
Northeast	35	37	13	*1	14
Midwest	12	40	14	4	30
South	*1	3	3	5	88
West	17	26	13	4	40
Percent minority enrollment					
5 percent or less	19	32	12	4	34
6 to 20 percent	13	30	7	3	47
21 to 50 percent	10	15	10	6	60
More than 50 percent	9	18	9	4	61
Percent of students in school eligible for free or reduced-price school lunch					
Less than 20 percent	12	35	12	3	37
20 to 39 percent	18	22	11	3	46
40 to 69 percent	14	20	7	4	54
70 percent or more	6	17	8	6	63

*Coefficient of variation greater than 50 percent.

NOTE: Percentages are computed across each row, but may not sum to 100 because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, Survey on the Condition of Public School Facilities, 1999.

Table 11.—Percent of public schools with air conditioning in various areas of the school, and the percentage distribution of those schools according to satisfaction with the condition of air conditioning in the school areas: 1999

Area	Area is all or partially air-conditioned	Condition of air conditioning*					
		Satisfactory			Unsatisfactory		
		Total	Very satisfactory	Satisfactory	Total	Unsatisfactory	Very unsatisfactory
Classrooms	63	84	33	50	16	13	4
Administrative offices	83	85	32	53	15	12	3
Computer labs	74	85	35	50	15	12	3
Media centers	67	87	39	48	13	9	3
Other areas	56	82	33	49	18	15	3

*Based on schools with air conditioning in that area of the school.

NOTE: Details may not sum to totals because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, Survey on the Condition of Public School Facilities, 1999.

that this was the situation for their classrooms[33] (table 10). Small and medium schools were more likely to indicate that they needed air conditioning in their classrooms than were large schools. Schools in the South were less likely than schools in any other region to indicate that their classrooms were not air-conditioned but needed to be; this is not surprising, given the very high proportion of schools in the South with air-conditioned classrooms. Schools with lower minority enrollment (20 percent or less minority enrollment) were generally more likely to indicate that they needed air conditioning in their classrooms than were schools with higher minority enrollments. Schools with the lowest concentration of poverty (less than 20 percent eligible for free or reduced-price school lunch) were more likely to report needing air conditioning in classrooms than were schools with greater concentrations of poverty.[34]

The questionnaire also asked for ratings of how satisfactory or unsatisfactory the air conditioning was in each area of the school that was air-conditioned. In general, about 85 percent of the schools reported that the air conditioning in the various areas of the school that had air conditioning was satisfactory or better, with about a third reporting it as very satisfactory, and about half reporting it as satisfactory for each area (table 11). Few schools (3 to 4 percent of those with air conditioning in a particular area) reported that they were very unsatisfied with the air conditioning in that area. Satisfaction with air conditioning in classrooms, administrative offices, computer labs, and media centers did not vary significantly by school characteristics (not shown in tables).[35]

[33] The percentages needing air conditioning are related, of course, to the percentages that already have air conditioning.

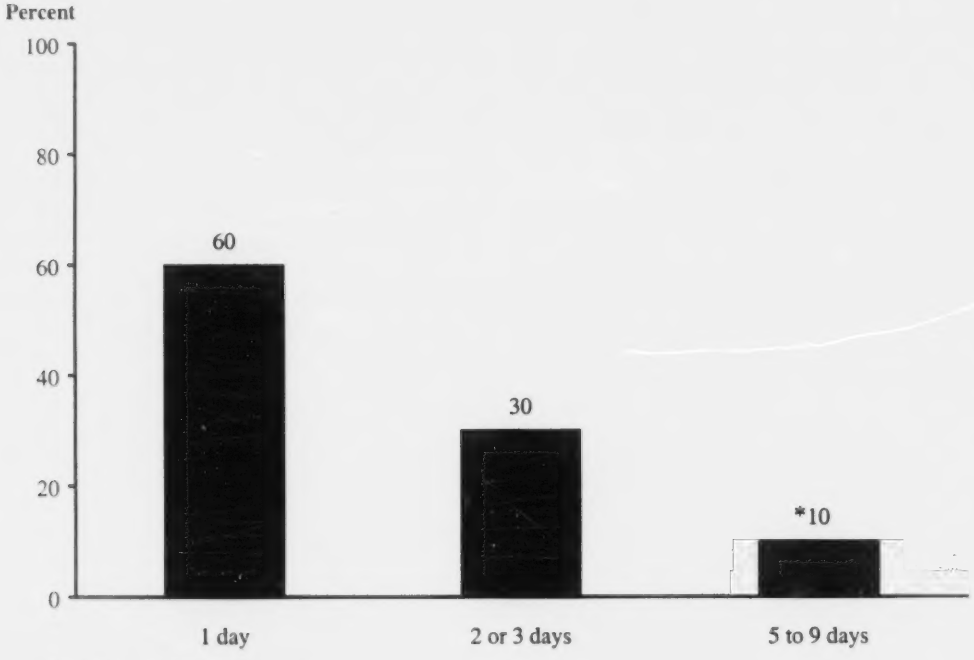
[34] It is likely that these seemingly paradoxical differences by minority enrollment and concentration of poverty in the school are related to region of the country. Schools with lower minority enrollment and concentration of poverty are more likely than schools with higher minority enrollment and concentration of poverty to be located in the Northeast and Midwest. Schools with higher minority enrollment and concentration of poverty are more likely than schools with lower minority enrollment and concentration of poverty to be located in the South and, to a somewhat lesser extent, in the West. For example, about three-quarters of the schools with the lowest minority enrollment and about two-thirds of the schools with the lowest concentration of poverty are located in the Northeast and Midwest. Conversely, roughly 45 percent of the schools with the highest minority enrollment and with the highest concentration of poverty are located in the South. Schools in the Northeast and Midwest were more likely than schools in the South to indicate that their classrooms were not air-conditioned but needed to be.

[35] GAO reported for 1994 that 51 percent of schools had air conditioning in classrooms, and 73 percent of schools had air conditioning in administrative offices (U.S. GAO 1995b). The item on the GAO questionnaire differed somewhat from the item on the FRSS questionnaire. The GAO questionnaire asked whether the school had air conditioning in classrooms, administrative offices, and/or other areas. It did not ask about computer labs and media centers, or about the extent of air conditioning or the need for air conditioning in various areas of the school. GAO reported for 1994 that about 85 percent of schools with air conditioning in a particular area reported that it was satisfactory or very satisfactory.

School Closures Due to Facilities Problems

Information was also obtained about the number of instructional days, if any, the school was closed because of inadequacies or problems with facilities during the 1998-99 school year.[36] Most schools (96 percent) were not closed during any instructional days because of inadequacies or problems with facilities (not shown in tables). For the 4 percent of schools that reported closures, the number of days ranged from 1 to 9, with 60 percent of those with a closure reporting being closed for one instructional day, and another 30 percent reporting being closed for two or three instructional days (figure 3).

Figure 3.—Percentage distribution of public schools with facilities-related closures according to the number of instructional days the school was closed due to inadequacies or problems with facilities during the 1998-99 school year



*Coefficient of variation greater than 50 percent.

NOTE: Percentages are based on the 4 percent of schools that reported closures on any instructional days because of inadequacies or problems with facilities during the 1998-99 school year.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, Survey on the Condition of Public School Facilities, 1999.

[36] A school closure on an instructional day does not necessarily result in lost instructional time for students. There are a number of strategies that schools can use to avoid losing instructional time, including adding instructional days during school holidays or at the end of the school year, or holding classes temporarily in other space, such as a community college or another school. However, these strategies may not be easy to implement. It should also be noted that school facilities problems may arise due to situations beyond the control of the school. Comments on some of the questionnaires mentioned closures due to things such as damage caused by storms or fires.

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4. SCHOOL PLANS FOR IMPROVEMENT

The previous chapters in this report portray the condition of public schools in 1999. However, the condition of school facilities is continuously changing. For example, districts may build new schools or extensively renovate existing schools, as well as make repairs to existing school buildings. Some of these activities occur as they are needed, but many are scheduled in district or school improvement plans. Conversely, maintenance may be deferred and buildings in need of repair may fall further into disrepair. Examining school plans for construction, renovation, repair, and replacement in the next 2 years provides a glimpse of the expected condition of school facilities in the near future.

Written Facilities Plans

One concrete indication of school planning for facilities improvements is the presence of a written long-range educational facilities plan. In 1999, 65 percent of public schools had written long-range facilities plans (table 12). This varied somewhat by school enrollment size, locale, and region. Large schools were more likely to report having written facilities plans than were small schools (71 percent versus 55 percent). Schools in central cities were more likely than schools in rural areas or small towns to have written long-range plans (70 percent versus 59 percent), and schools in the South were more likely than schools in the Midwest to have such plans (68 percent versus 56 percent). The apparent differences in the presence of a written facilities plan between schools in the Midwest and the Northeast and West is not statistically significant, partly due to the relatively large standard errors for these three estimates.

Plans for Construction

The survey asked whether schools planned to build new attached and/or detached permanent additions in the next 2 years. Overall, 20 percent of schools indicated plans to build new permanent additions in the next 2 years (table 13). Plans to build new permanent additions did not vary significantly by school characteristics, except that schools in urban fringe areas and large towns were more likely to report construction plans for new additions than were schools located in rural areas and small towns (25 percent compared with 17 percent). Note that differences that appear large may not be statistically significant due to relatively large standard errors around the estimates, or because of the Bonferroni adjustment to the analyses.

The survey also asked if schools planned to install new temporary buildings in the next 2 years. Overall, 10 percent of public schools indicated that they had such plans (table 13). This means that approximately 8,100 schools plan to install new temporary buildings in the next 2 years (not shown in tables). School plans to install new temporary buildings varied somewhat based upon school size, locale, region, and minority enrollment. Large schools were about three times more likely than medium or small schools to indicate plans to install new temporary buildings (18 percent versus 6 percent). Schools in urban fringe areas and large towns were more likely to report plans to install new temporary structures than were schools in rural areas and small towns (13 percent versus 7 percent). Schools located in the South and West were more likely to report plans to install new temporary buildings in the next 2 years than were schools located in the Northeast and Midwest (12 percent and 21 percent compared with 4 percent and 5 percent, respectively). Finally, schools with minority enrollments of 21 to 50 percent and more

Table 12.—Percent of public schools with a written long-range educational facilities plan for the school, by school characteristics: 1999

School characteristic	School has written facilities plan
All public schools	65
School instructional level	
Elementary school	65
High school	65
Combined	57
School enrollment size	
Less than 300	55
300 to 599	65
600 or more	71
Locale	
Central city	70
Urban fringe/large town	67
Rural/small town	59
Region	
Northeast	69
Midwest	56
South	68
West	68
Percent minority enrollment	
5 percent or less	61
6 to 20 percent	68
21 to 50 percent	68
More than 50 percent	65
Percent of students in school eligible for free or reduced-price school lunch	
Less than 20 percent	64
20 to 39 percent	65
40 to 69 percent	67
70 percent or more	64

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, Survey on the Condition of Public School Facilities, 1999.

Table 13.—Percent of public schools with construction projects planned for the school in the next 2 years, by school characteristics: 1999

School characteristic	Build new attached/ detached permanent additions	Install new temporary buildings
All public schools	20	10
School instructional level		
Elementary school	19	10
High school	23	13
Combined	27	*2
School enrollment size		
Less than 300	17	6
300 to 599	19	6
600 or more	24	18
Locale		
Central city	17	11
Urban fringe/large town	25	13
Rural/small town	17	7
Region		
Northeast	16	4
Midwest	17	5
South	25	12
West	19	21
Percent minority enrollment		
5 percent or less	18	6
6 to 20 percent	21	11
21 to 50 percent	23	14
More than 50 percent	19	13
Percent of students in school eligible for free or reduced-price school lunch		
Less than 20 percent	23	10
20 to 39 percent	18	12
40 to 69 percent	21	10
70 percent or more	18	9

*Coefficient of variation greater than 50 percent.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, Survey on the Condition of Public School Facilities, 1999.

than 50 percent were more likely than schools with minority enrollments of 5 percent or less to report plans to install new temporary buildings in the next 2 years (14 percent and 13 percent compared with 6 percent, respectively).

Plans for Major Repair, Renovation, or Replacement of Building Features

About half of the schools (51 percent) planned to make major repairs, renovations, or replacements to at least one building feature in the next 2 years (table 14). This means that approximately 39,700

Table 14.—Percent of public schools with plans to make at least one major repair, renovation, or replacement to a building feature in the next 2 years, by school characteristics: 1999

School characteristic	At least one major repair, renovation, or replacement planned	Major repair or renovation planned	Replacement planned
All public schools	51	41	25
School instructional level			
Elementary school	49	39	23
High school	57	48	28
Combined	55	37	35
School enrollment size			
Less than 300	45	36	19
300 to 599	52	40	26
600 or more	53	45	27
Locale			
Central city	55	48	29
Urban fringe/large town	50	40	24
Rural/small town	48	36	22
Region			
Northeast	49	38	27
Midwest	48	39	22
South	47	37	23
West	62	52	30
Percent minority enrollment			
5 percent or less	45	35	19
6 to 20 percent	51	41	28
21 to 50 percent	51	40	25
More than 50 percent	58	49	30
Percent of students in school eligible for free or reduced-price school lunch			
Less than 20 percent	52	41	25
20 to 39 percent	44	36	21
40 to 69 percent	52	43	25
70 percent or more	56	46	30

NOTE: Percents in each column are computed across nine building features. Rows do not sum to totals because schools could plan major repairs or renovations on some features, and plan replacements for other features.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, Survey on the Condition of Public School Facilities, 1999.

schools have plans for major repairs, renovations, or replacements in the next 2 years (not shown in tables). Overall, 41 percent of schools indicated plans to complete major repairs or renovations to at least one building feature in the next 2 years, and 25 percent planned to replace at least one building feature during the next 2 years (table 14). Among schools that planned any repair or renovation activity in the next 2 years, an average of 2.7 building features were slated for repair or

renovation; among schools that planned to replace any building features, an average of 2.2 features were planned for replacement in the next 2 years (not shown in tables). Although plans for replacement did not vary significantly by school characteristics, plans for major repair or renovation varied somewhat by locale and percent minority enrollment in the school (table 14).[37] Schools in central cities were more likely to plan repairs or renovations than were schools in rural areas or small towns (48 percent versus 36 percent). In addition, schools with more than 50 percent minority enrollment were more likely than schools with less than 5 percent minority enrollment to have plans for repairs or renovations in the next 2 years (49 percent versus 35 percent).

Plans for repair, renovation, or replacement also varied based upon the overall condition of the school. While 46 percent of schools reporting that all types of onsite buildings were in adequate or better overall condition planned at least one repair, renovation, or replacement in the next 2 years, 67 percent of schools with at least one type of onsite building in less than adequate condition reported plans to make at least one repair, renovation, or replacement (figure 4). This means that one-third of schools with at least one type of onsite building in less than adequate condition (approximately 6,300 schools; not shown in tables) reported no plans for repair, renovation, or replacement in the next 2 years, suggesting that the physical condition of those schools may deteriorate even further in the near future.

As noted above, although about half of all schools indicated plans to renovate, repair, or replace at least one building feature, many of these schools had plans affecting only a few building features. For each building feature, the majority of public schools (75 to 90 percent) had no plans for major repair, renovation, or replacement (table 15). For each building feature, between 7 and 17 percent of schools indicated plans to repair or renovate it, and between 3 and 11 percent of schools reported plans to replace that building feature.

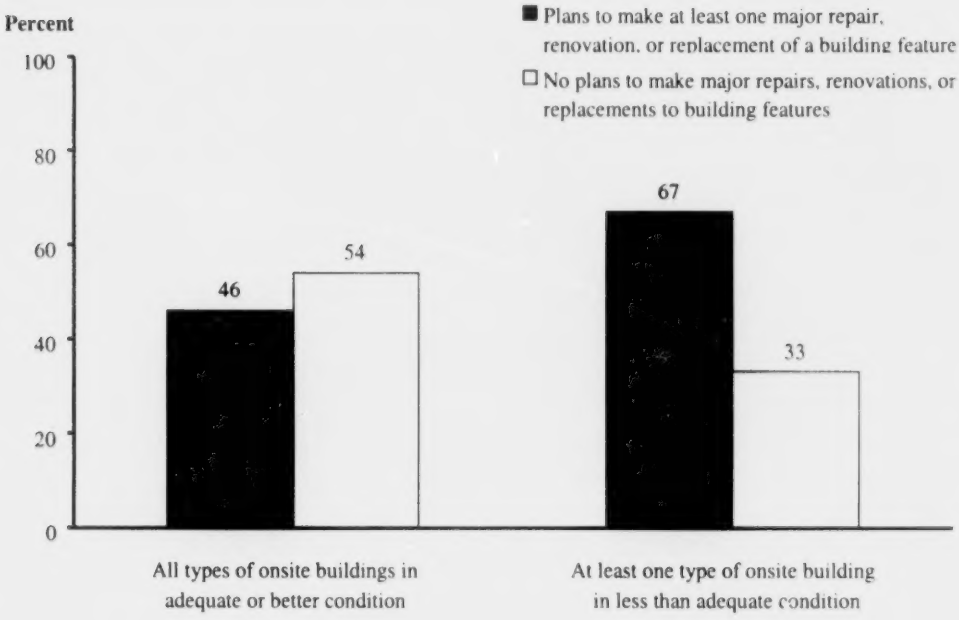
Plans to repair, renovate, or replace specific features of school buildings were examined against the school's assessment of the condition of each feature as adequate or better or less than adequate.[38] In general, schools with adequate or better building features were more likely than those with less than adequate features to report that they had no plans for repair, renovation, or replacement (table 16). For example, 87 percent of schools with adequate or better roofs compared with 36 percent of those with less than adequate roofs indicated that they had no plans to repair, renovate, or replace the feature. These differences were consistent for every other building feature examined in the study—framing, floors, or foundation; exterior walls, finishes, windows, or doors; interior finishes or trim; plumbing; heating, ventilation, or air conditioning; electric power; electrical lighting; and life safety features.

For every building feature examined except roofs, 50 percent or more of the schools in which a given feature was in less than adequate condition indicated that they had no plans to repair, renovate, or replace that feature in the next 2 years (table 16). Major repairs or renovations were planned on these features by 19 to 35 percent of schools reporting them as less than adequate, and replacements were planned by 11 to 20 percent of schools reporting them as less than adequate. For schools reporting their roofs to be in less than adequate condition, 36 percent planned no repair, renovation, or replacement of the roof, 24 percent planned to make major repairs or renovations to the roof, and 40 percent planned to replace it in the next 2 years. Thus, many schools with building features in less than adequate condition may experience worsening conditions in the near future, since they do not plan to correct the inadequacy within the next 2 years.

[37] Note that differences that may appear large may not be statistically significant, due in part to the relatively large standard errors surrounding the estimates (because of the small sample size) and the use of the Bonferroni adjustment. These are discussed further in appendix A.

[38] See table 4 for the percent of schools rating the condition of each building feature as less than adequate.

Figure 4.—Percentage distribution of public schools according to whether there are plans to make major repairs, renovations, or replacements of any building feature in the next 2 years, by condition of onsite buildings: 1999


Percent
100
80
60
40
20
0
Plans to make at least one major repair, renovation, or replacement of a building feature
No plans to make major repairs, renovations, or replacements to building features
46
54
67
33
All types of onsite buildings in adequate or better condition
At least one type of onsite building in less than adequate condition

NOTE: The condition of all onsite buildings is computed across original buildings, permanent additions, and temporary buildings. Ratings of adequate or better encompass the ratings of excellent, good, and adequate. Ratings of less than adequate encompass the ratings of fair, poor, and replace. Plans to make major repairs, renovations, or replacements are computed across nine building features (e.g., roofs, plumbing).

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, Survey on the Condition of Public School Facilities, 1999.

Table 15.—Percentage distribution of public schools according to their plans for major repair, renovation, or replacement of each building feature in the next 2 years: 1999

Feature	No planned repair, renovation, or replacement	Major repair or renovation	Replacement
Roofs	76	13	11
Framing, floors, foundations	90	7	3
Exterior walls, finishes, windows, doors	80	13	6
Interior finishes, trim	82	15	3
Plumbing	83	13	4
Heating, ventilation, air conditioning	75	17	9
Electric power	81	14	4
Electrical lighting	83	10	6
Life safety features	83	10	7

NOTE: Percentages are computed across each row, but may not sum to 100 because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, Survey on the Condition of Public School Facilities, 1999.

Table 16.—Percentage distribution of public schools according to school plans for major repair, renovation, or replacement of each building feature in the next 2 years, by condition of the building feature: 1999

Building feature and condition	No planned repair, renovation, or replacement	Major repair or renovation	Replacement
Roofs			
Adequate or better	87	9	3
Less than adequate	36	24	40
Framing, floors, foundation			
Adequate or better	93	5	2
Less than adequate	69	19	11
Exterior walls, finishes, windows, doors			
Adequate or better	89	8	3
Less than adequate	53	29	18
Interior finishes, trim			
Adequate or better	88	11	1
Less than adequate	54	33	13
Plumbing			
Adequate or better	90	9	1
Less than adequate	62	25	13
Heating, ventilation, air conditioning			
Adequate or better	84	13	4
Less than adequate	53	26	20
Electric power			
Adequate or better	90	8	2
Less than adequate	50	35	14
Electrical lighting			
Adequate or better	89	8	4
Less than adequate	58	23	19
Life safety features			
Adequate or better	90	7	4
Less than adequate	56	25	19

NOTE: Percentages are computed across each row, but may not sum to 100 because of rounding. Ratings of adequate or better encompass the ratings of excellent, good, and adequate. Ratings of less than adequate encompass the ratings of fair, poor, and replace.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, Survey on the Condition of Public School Facilities, 1999.

5. FUNCTIONAL AGE OF SCHOOLS: CONDITION AND PLANS FOR IMPROVEMENT

The age of schools is frequently included in discussions of the state of school facilities, either as a proxy for condition or as a partial explanation. For example, older schools are oftentimes referred to as broken down or in need of repair, when in fact not all old schools are in this condition. Additionally, schools that are in need of repair are often referred to as showing their age, though in fact not all schools in need of repair are particularly old. In this chapter, information about the age of public schools is presented. Age is then examined in the context of school condition and plans for repair, renovation, and replacement of building features.

Determining the Age of Public Schools

Determining and describing the age of public schools can be difficult. Many schools have instructional buildings that have been heavily renovated in the years since they were built. For such schools, the year of their last renovation is often a better index of the school's age than the year of original construction. In describing school age, therefore, consideration must be given to both the year of construction and year of most recent renovation for schools that have been renovated. GAO makes a similar point in their discussion about building age, pointing out that building age, by itself, is not necessarily the most significant factor in considering the condition of schools, and that many older school buildings continue to have a useful life equivalent to a new building if they are well maintained and periodically renovated (U.S. GAO 1995b, 1996).

For this report, a measure of the functional age of the school is derived and then used to examine the relationship between school age and the condition of schools and plans for improvement. Functional age is based on the year of construction of the main instructional building(s) for schools that have not experienced any major renovations since their original construction. However, for schools that have been renovated since their construction, the functional age is based on the year of the most recent major renovation. In addition, information is presented in this report about the age of the main instructional buildings as measured in years since original construction, and in years since the most recent renovation.

In 1999, the average age of the main instructional building(s) of public schools was 40 years, based on years since original construction (table 17). Across all schools reporting a major renovation since initial construction, the renovation had occurred on average 11 years ago. The average functional age of schools, as defined above, was 16 years. The average functional age of the school varied by school enrollment, with small schools on average older than medium or large schools (20 years compared with 15 and 14 years, respectively).

In addition to examining the average age of schools, schools can also be examined based upon the distribution of schools across different functional age groups (figure 5 and table 18). Overall, about one-third (32 percent) of public schools had a functional age of less than 5 years, 28 percent had a functional age of 5 to 14 years, 26 percent had a functional age of 15 to 34 years, and 14 percent had a functional age of 35 years or more. There was some variation in the functional age distributions by school enrollment size and region (table 18). Large schools were more likely

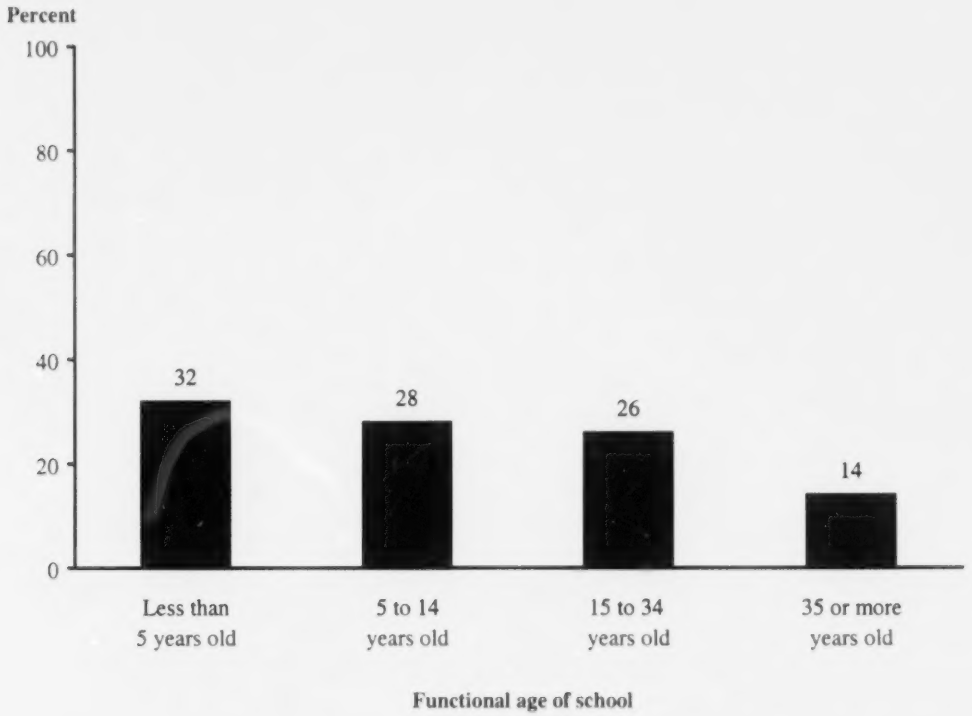
Table 17.—Age of public schools based upon years since construction of the main instructional building(s), years since most recent major renovation, and functional age of the school, by school characteristics: 1999

School characteristic	Years since construction	Years since most recent renovation	Functional age of the school*
All public schools	40	11	16
School instructional level			
Elementary school	40	11	16
High school	40	11	15
Combined	41	8	12
School enrollment size			
Less than 300	43	15	20
300 to 599	42	11	15
600 or more	35	9	14
Locale			
Central city	42	12	17
Urban fringe/large town	37	10	14
Rural/small town	41	12	16
Region			
Northeast	43	13	14
Midwest	44	13	18
South	36	10	15
West	37	8	15
Percent minority enrollment			
5 percent or less	42	12	16
6 to 20 percent	39	12	15
21 to 50 percent	35	8	13
More than 50 percent	42	11	18
Percent of students in school eligible for free or reduced-price school lunch			
Less than 20 percent	38	11	14
20 to 39 percent	38	11	16
40 to 69 percent	40	11	14
70 percent or more	44	11	19

*Functional age is defined as the age of the school based on the year of the most recent renovation or the year of construction of the main instructional building(s) if no renovation has occurred.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, Survey on the Condition of Public School Facilities, 1999.

Figure 5.—Percentage distribution of public schools according to the functional age of the school: 1999



NOTE: Functional age is defined as the age of the school based on the year of the most recent renovation or the year of construction of the main instructional building(s) if no renovation has occurred.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, Survey on the Condition of Public School Facilities, 1999.

than small schools to have a functional age of less than 5 years (37 percent compared with 25 percent), and small schools were more likely than large schools to have a functional age between 15 and 34 years (35 percent compared with 23 percent). Schools in the South were more likely than schools in the Midwest to have schools with a functional age of 5 to 14 years (35 percent compared with 25 percent), and schools in the Midwest were more likely than schools in the Northeast to have a functional age of 35 or more years (18 percent compared with 8 percent). Other differences based upon school characteristics that appear large may not be statistically significant, due in part to relatively large standard errors around estimates (due partly to the sample size) or the Bonferroni adjustment for multiple comparisons.

Functional Age and Condition of Schools

It is often assumed that school age and condition are closely related, with older schools being in worse condition than newer schools. This relationship is explored using the functional age of schools as an indicator of age, and three indices of school condition: at least one onsite building in less than adequate condition, at least one building feature in less than adequate condition, and at least one environmental factor in unsatisfactory condition. In general, the survey data support the assumption that older schools typically have worse school conditions than newer schools (figure 6).

Table 18.—Percentage distribution of public schools according to the functional age of the school, by school characteristics: 1999

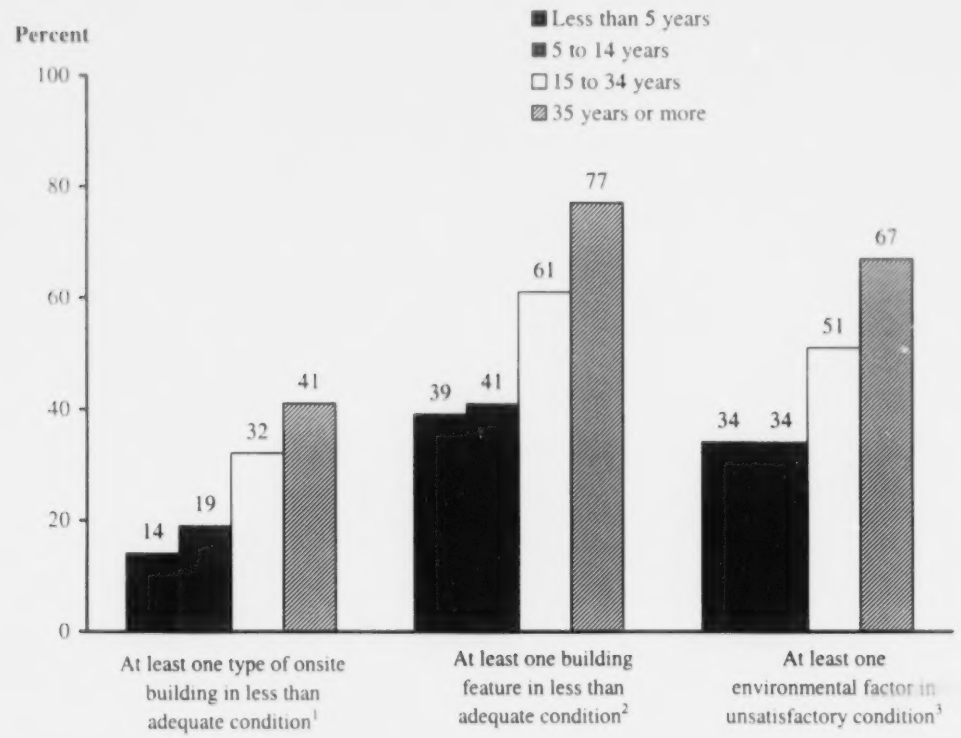
School characteristic	Functional age of the school			
	Less than 5 years old	5-14 years old	15-34 years old	35 or more years old
All public schools	32	28	26	14
School instructional level				
Elementary school	30	30	25	15
High school	37	24	29	10
Combined	47	15	29	*9
School enrollment size				
Less than 300	25	21	35	20
300 to 599	32	32	23	13
600 or more	37	28	23	12
Locale				
Central city	30	27	26	17
Urban fringe/large town	34	31	23	12
Rural/small town	32	26	29	13
Region				
Northeast	34	23	34	8
Midwest	32	25	25	18
South	29	35	25	10
West	36	25	21	18
Percent minority enrollment				
5 percent or less	33	26	27	13
6 to 20 percent	29	32	26	12
21 to 50 percent	36	33	20	12
More than 50 percent	31	22	29	18
Percent of students in school eligible for free or reduced-price school lunch				
Less than 20 percent	32	33	24	11
20 to 39 percent	30	30	25	15
40 to 69 percent	37	24	28	11
70 percent or more	30	23	26	21

*Coefficient of variation greater than 50 percent.

NOTE: Functional age is defined as the age of the school based on the year of the most recent renovation or the year of construction of the main instructional building(s) if no renovation has occurred. Percentages are computed across each row but may not sum to 100 because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, Survey on the Condition of Public School Facilities, 1999.

Figure 6.—Percent of public schools with at least one type of onsite building in less than adequate condition, at least one building feature in less than adequate condition, or at least one environmental factor in unsatisfactory condition, by functional age category: 1999



[1]The condition of all onsite buildings is computed across original buildings, permanent additions, and temporary buildings. Ratings of less than adequate encompass the ratings of fair, poor, and replace.

[2]The condition of all building features is computed across nine building features (e.g., roofs, plumbing). Ratings of less than adequate encompass the ratings of fair, poor, and replace.

[3]The condition of all environmental factors is computed across six environmental factors (e.g., heating, ventilation). Ratings of unsatisfactory include the ratings of unsatisfactory and very unsatisfactory.

NOTE: Functional age is defined as the age of the school based on the year of the most recent renovation or the year of construction of the main instructional building(s) if no renovation has occurred.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, Survey on the Condition of Public School Facilities, 1999.

Overall, about one-fourth of all public schools reported that at least one type of onsite building was in less than adequate condition (see table 3). The proportion of schools with at least one type of onsite building in less than adequate condition varied somewhat by the functional age of the school, with older schools generally more likely than newer schools to report this condition (figure 6). Schools with functional ages of 35 years or more, and those aged 15 to 34 years, were more likely to report at least one onsite building in less than adequate condition than were newer schools with functional ages of less than 5 years or 5 to 14 years (41 percent and 32 percent versus 14 percent and 19 percent, respectively).

Another indicator of poor school condition is the assessment of building features as less than adequate. Half of the schools reported at least one building feature in less than adequate condition (see table 4). As with the pattern for onsite buildings, the proportion of schools

indicating less than adequate condition for at least one building feature varied somewhat by the functional age of the school, with older schools generally more likely than newer schools to report this condition (figure 6). About three-fourths (77 percent) of schools with functional ages of 35 years or more, and 61 percent of schools aged 15 to 34 years, indicated less than adequate condition for at least one building feature, compared with 41 percent for schools with functional ages of 5 to 14 years and 39 percent for those aged less than 5 years.

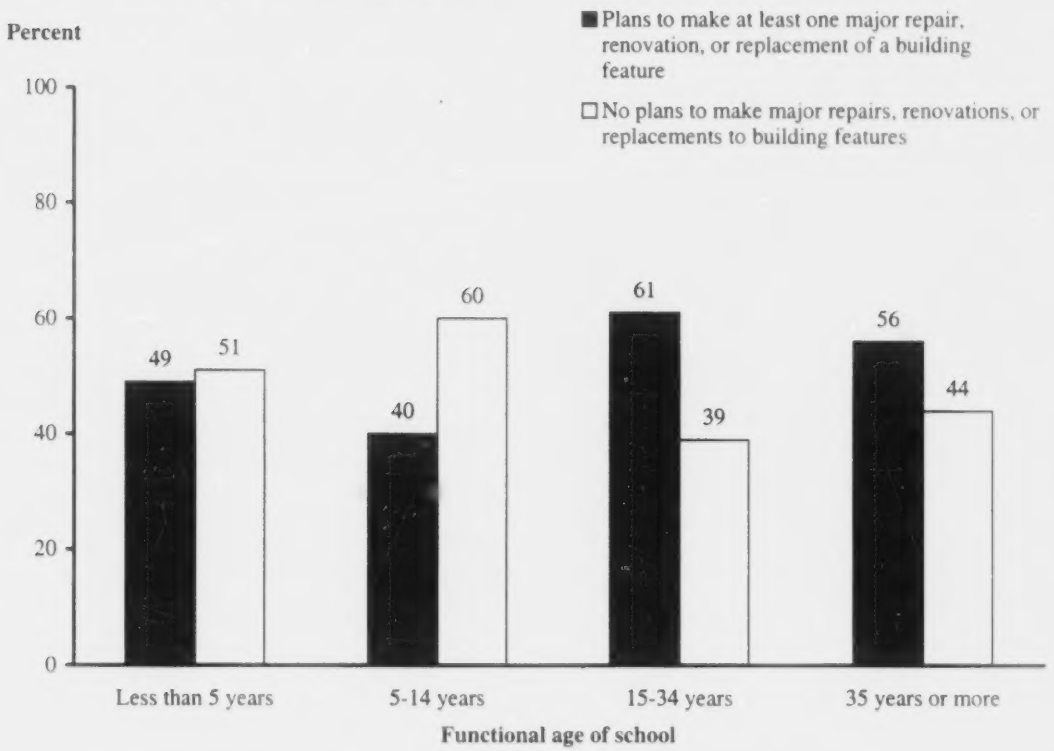
The final indicator of school condition used in this report is satisfaction with the condition of six environmental factors. Forty-three percent of the schools reported that at least one environmental factor was unsatisfactory (see table 8).[39] The proportion of schools reporting at least one unsatisfactory environmental factor differed somewhat by the school's functional age, with older schools generally more likely to report this condition than newer schools (figure 6). About two-thirds of the schools aged 35 years or more, and about half of the schools aged 15 to 34 years, reported at least one unsatisfactory environmental factor, compared with 34 percent each for schools with functional ages of less than 5 years or from 5 to 14 years.

Functional Age and Plans for Renovation, and Replacement

As schools age, they often require repairs or renovations. Overall, about half (51 percent) of all public schools planned at least one major repair, renovation, or replacement of a building feature in the next 2 years (see table 14). In addition, as schools age, more effort may be invested in maintaining them (of course, some districts may opt to replace rather than maintain an aging school). Thus, the functional age of schools might be expected to make a difference to whether schools have plans for a major repair, renovation, or replacement of building features in the near future. This idea is partially supported by the survey data (figure 7). Schools with a functional age of 15 to 34 years were more likely to report that they had plans for at least one major repair, renovation, or replacement of a building feature than were newer schools with functional ages of less than 5 years or 5 to 14 years (61 percent versus 49 percent and 40 percent, respectively). However, the oldest schools (with a functional age of 35 years or more) did not differ statistically from schools with functional ages of less than 5 years or 15 to 34 years in reporting plans for at least one major repair, renovation, or replacement of a building feature.

[39] While condition of buildings and building features are reported as less than adequate, the environmental factors are reported as unsatisfactory.

Figure 7.—Percentage distribution of public schools in each category of functional age by whether there are plans to make major repairs, renovations, or replacements of any building feature in the next 2 years: 1999



NOTE: Functional age is defined as the age of the school based on the year of the most recent renovation or the year of construction of the main instructional building(s) if no renovation has occurred. Plans to make major repairs, renovations, or replacements are computed across nine building features (e.g., roofs, plumbing).

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, Survey on the Condition of Public School Facilities, 1999.

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6. OVERCROWDING

Overcrowding occurs when the number of students enrolled in the school is larger than the number of students the school is designed to accommodate. When overcrowding occurs, it may contribute to the wear and tear on schools. This chapter provides information about the extent of overcrowding in public schools and the relationship between overcrowding and school condition. Information is also provided about schools' uses of various scheduling and space practices that are sometimes used to reduce overcrowding within the school.

Extent of Overcrowding

One estimate of overcrowding is the degree to which school enrollments exceed the number of students the school is designed to accommodate.[40] The survey asked for the number of students enrolled in the school and the number of students the school was designed to serve, excluding space provided by portables and other temporary instructional space.[41] Using these two numbers, a proportion was calculated indicating the degree to which enrollment exceeds the capacity of the permanent buildings and instructional space using the following formula:

> X= [(total student enrollment) – (capacity of permanent instructional buildings and space)] / (capacity of permanent instructional buildings and space).

Using this formula, schools with enrollments within 5 percent of the capacity of the permanent instructional buildings and space were considered neither underenrolled nor overcrowded.[42] When the value of the proportion was greater than 5 percent and negative, student enrollment was considered less than the building's capacity, and the school was considered underenrolled. When the value of the proportion was over 5 percent and positive, the enrollment exceeded the building's capacity, and the school was considered overcrowded (or overenrolled). The degree of underenrollment or overcrowding was indicated by the magnitude of the absolute value of the ratio.

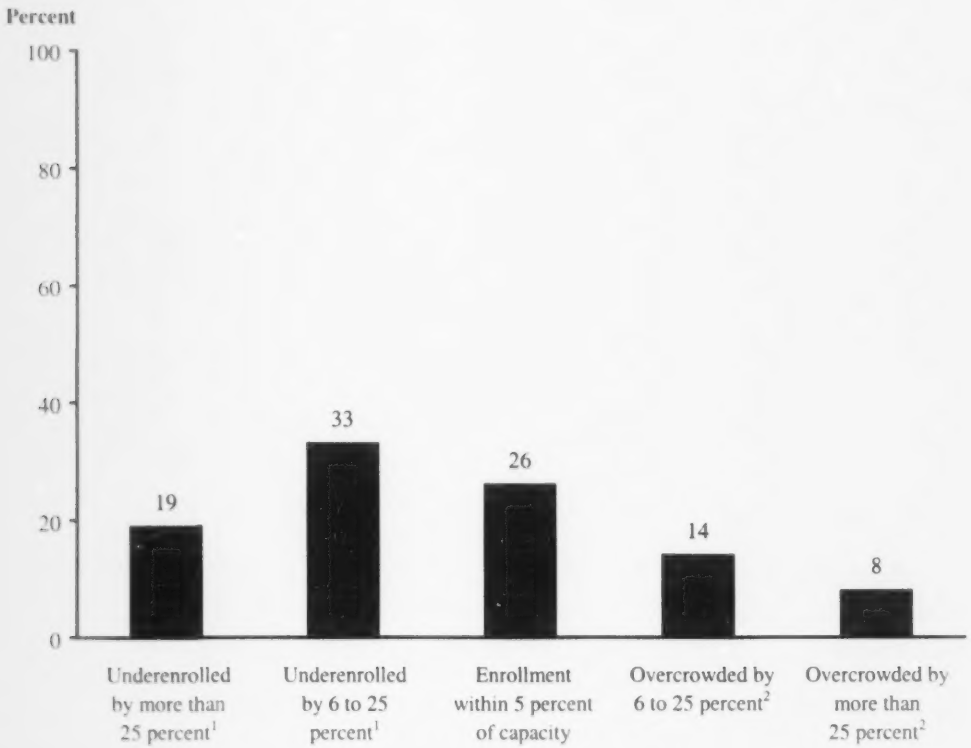
Overall, about one-quarter (26 percent) of public schools had enrollments within 5 percent of the capacity of their permanent instructional buildings and space (figure 8 and table 19). One-third (33 percent) of schools had enrollments that were 6 to 25 percent below their capacity, and 19 percent of schools had enrollments that were more than 25 percent below their capacity. At the other end of the spectrum, approximately 14 percent of schools had enrollments that were 6 to 25 percent greater than the capacity of their permanent instructional buildings and space, and 8 percent had enrollments that exceeded their permanent capacity by more than 25 percent. Thus, approximately half of schools were underenrolled, about a quarter were near their

[40] Although overcrowding in schools is a frequent topic of discussion, particularly in the popular press, there have been no systematic and universally accepted measures of overcrowding. In the 1994 study, GAO attempted to measure overcrowding by collecting information about the number and total square feet of space in original buildings, permanent additions, and temporary buildings. GAO did not consider this attempt successful, and the data from these measures were not included in any of their reports. In a search of the overcrowding literature, we found that most measures consisted of subjective, self-report questions, such as "Is this school overcrowded?" For this study, we developed a measure based on the ratio of actual enrollment to building capacity.

[41] The measure excluded capacity provided by temporary buildings and other temporary instructional space because these are often used to provide additional capacity for the school when overcrowding occurs. Including temporary buildings and instructional space would have obscured overcrowding at schools that use these to provide additional capacity for the school when the school enrollment exceeds the capacity of the permanent buildings and space. This decision was made during the survey development process in consultation with GAO staff who had worked on the 1994 study.

[42] An interval was used rather than an exact point estimate match to indicate whether a school was underenrolled or overcrowded, since enrollment always fluctuates slightly at schools, and a small proportion of students above the building's capacity would be unlikely to severely strain the capacity of the school.

Figure 8.—Percentage distribution of public schools reporting that they are underenrolled, at capacity, or overcrowded: 1999



[1]"Underenrolled" indicates that the capacity of the permanent building(s) and instructional space is greater than student enrollment by more than 5 percent.

[2]"Overcrowded" indicates that the enrollment of the school is greater than the capacity of the permanent building(s) and instructional space by more than 5 percent.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, Survey on the Condition of Public School Facilities, 1999.

capacity, and about a quarter overcrowded based on the capacity of their permanent instructional buildings and space. This translates into about 40,500 schools that were underenrolled, 20,400 schools at their capacity, and 17,400 schools that were overcrowded (not shown in tables).

The relationship between enrollment and building capacity was examined against various school characteristics (table 19). The proportion of schools that were neither underenrolled nor overcrowded (i.e., schools that had enrollments within 5 percent of their capacity) differed somewhat by the school's instructional level and enrollment size. For instance, high schools were less likely than elementary schools to have enrollments within 5 percent of their capacity (28 percent versus 17 percent). In addition, small schools were less likely than medium and large schools to indicate that they had enrollments within 5 percent of their capacity (16 percent versus 29 percent and 30 percent, respectively).

Schools with enrollments that were 25 percent or more below their capacity might be considered severely underenrolled. The proportion of schools reporting enrollments that were 25 percent or more below their capacity varied by

Table 19.—Percentage distribution of public schools reporting that they are underenrolled, at capacity, or overcrowded, by school characteristics: 1999

School characteristic	Underenrolled[1]		Enrollment within 5 percent of capacity	Overcrowded[2]	
	More than 25 percent	6-25 percent		6-25 percent	More than 25 percent
All public schools	19	33	26	14	8
School instructional level					
Elementary school	17	31	28	15	8
High school	21	43	17	11	8
Combined	33	21	31	9	‡
School enrollment size					
Less than 300	41	30	16	10	4
300 to 599	15	37	29	14	5
600 or more	8	31	30	18	14
Locale					
Central city	16	33	24	15	11
Urban fringe/large town	12	36	28	17	8
Rural/small town	27	30	26	11	6
Region					
Northeast	18	39	27	11	4
Midwest	21	39	26	10	5
South	17	30	26	18	8
West	16	26	26	18	15
Percent minority enrollment					
5 percent or less	23	38	23	12	4
6 to 20 percent	11	38	26	16	8
21 to 50 percent	19	30	27	18	6
More than 50 percent	18	24	30	13	15
Percent of students in school eligible for free or reduced-price school lunch					
Less than 20 percent	15	38	24	16	6
20 to 39 percent	19	34	26	13	8
40 to 69 percent	15	33	29	16	7
70 percent or more	27	26	24	12	12

[1]"Underenrolled" indicates that the capacity of the permanent buildings and instructional space is greater than student enrollment by more than 5 percent.

[2]"Overcrowded" indicates that the enrollment of the school is greater than the capacity of the permanent building(s) and instructional space by more than 5 percent.

‡ Coefficient of variation greater than 50 percent.

NOTE: Percentages are computed across each row, but may not sum to 100 because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, Survey on the Condition of Public School Facilities, 1999.

enrollment size, with the likelihood of being severely underenrolled decreasing with the school's enrollment size (table 19). In addition, schools located in rural areas or small towns were more likely than those in central cities and urban fringe areas or large towns to be underenrolled by more than 25 percent of their capacity (27 percent versus 16 percent and 12 percent, respectively).[43]

The proportion of schools experiencing *severe* overcrowding (i.e., where enrollments exceeded capacity by more than 25 percent) differed somewhat by enrollment size, geographic region, and percent minority enrollment in the school (table 19).[44] Large schools were more likely than small and medium schools to be overcrowded by more than 25 percent of their capacity (14 percent versus 4 percent and 5 percent, respectively). Similarly, schools in the West were more likely than those in the Northeast or Midwest to be severely overcrowded (15 percent versus 4 percent and 5 percent, respectively). In addition, schools with more than 50 percent minority enrollment were more likely to report being severely overcrowded than were schools with 21 to 50 percent minority enrollment and those with 5 percent or less minority enrollment (15 percent versus 6 percent and 4 percent, respectively).

Together these data suggest that the majority of schools are either underenrolled or within 5 percent of their permanent capacity. School overcrowding, when it occurs, is present across all school characteristics, but more severe overcrowding (i.e., enrollments exceeding capacity by more than 25 percent) is more evident among schools with particular characteristics (see above). While potential reasons for this overcrowding were not explored in the survey, changes in public school enrollment growth may contribute to overcrowding. According to a 1999 report by the U.S. Department of Education (1999a), the West and the South led the nation in school enrollment growth, and cities and suburbs both experienced substantial school enrollment growth in the last 10 years. Enrollment growth in the West was particularly notable, increasing 26 percent from 1989 to 1999. During this time period, public school enrollment grew by 16 percent in the South, 14 percent in the Northeast, and 10 percent in the Midwest.

Overcrowding and School Condition

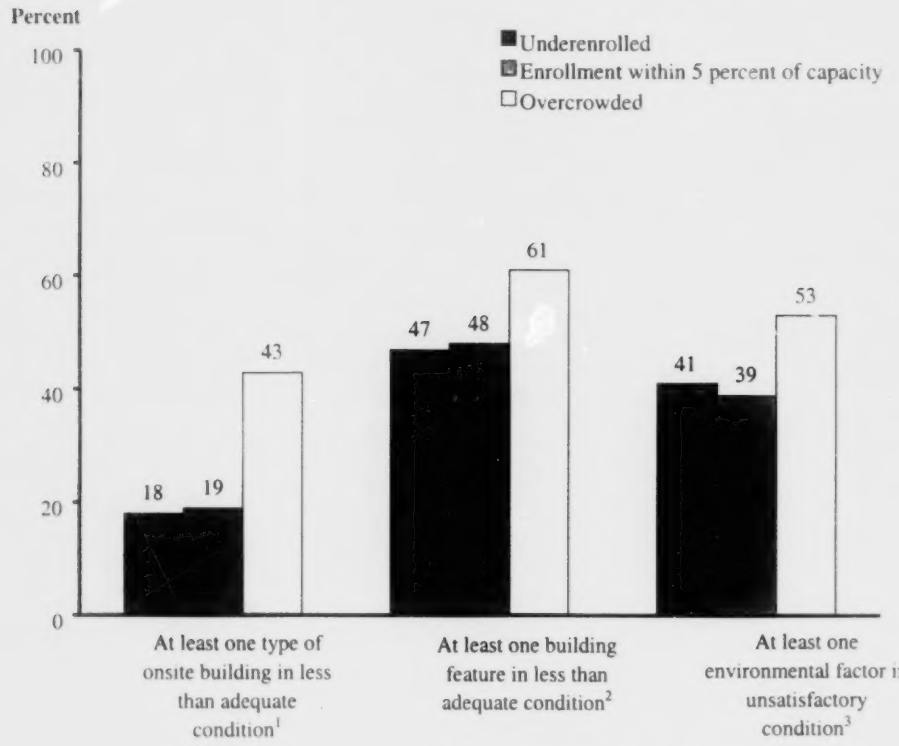
The work of Kozol (1991) and others suggests that in some public schools, overcrowding and crumbling buildings go hand in hand. According to this view, schools overburdened by too many students are likely to experience more wear and tear to their facilities. To examine the relationship between overcrowding and school condition, schools in this study were classified as being underenrolled, within 5 percent of their capacity, or overcrowded.

As noted earlier, 24 percent of all public schools reported at least one type of onsite building to be in less than adequate condition (see table 3). This percentage varied based upon the relationship between enrollment and capacity within the school (figure 9). Schools that were overcrowded were about twice as likely as schools that were underenrolled or within 5 percent of their capacity to indicate that they have at least one type of onsite building in less than adequate condition (43 percent versus 18 percent and 19 percent, respectively). Similarly, while 50 percent of all schools reported that at least one building feature was in less than adequate condition (see table 4), this percentage varied based upon the relationship between enrollment and capacity within each school (figure 9). Schools that were overcrowded were more likely than schools that were either underenrolled or within 5 percent of their capacity to have at least one building feature in less than adequate condition (61 percent versus 47 percent and 48 percent, respectively). Finally, while 43 percent of all schools indicated that they had at least one environmental factor that was unsatisfactory (see

[43] Note that differences that may appear large may not be statistically significant, due in part to the relatively large standard errors surrounding the estimates (because of the small sample size) and the use of the Bonferroni adjustment. These are discussed further in appendix A.

[44] Some of the differences that may appear large may not be statistically significant due to the relatively large standard errors surrounding the estimates (in part because of the small sample size) and the use of the Bonferroni adjustment. See appendix A for a more detailed discussion.

Figure 9.—Percent of public schools with at least one type of onsite building in less than adequate condition, at least one building feature in less than adequate condition, or at least one environmental factor in unsatisfactory condition, by enrollment to capacity ratio category: 1999



[1]The condition of all onsite buildings is computed across original buildings, permanent additions, and temporary buildings. Ratings of less than adequate encompass the ratings of fair, poor, and replace.

[2]The condition of all building features is computed across nine building features (e.g., roofs, plumbing). Ratings of less than adequate encompass the ratings of fair, poor, and replace.

[3]The condition of all environmental factors is computed across six environmental factors (e.g., heating, ventilation). Ratings of unsatisfactory include the ratings of unsatisfactory and very unsatisfactory.

NOTE: "Underenrolled" indicates that the capacity of the permanent building(s) and instructional space is greater than student enrollment by more than 5 percent. "Overcrowded" indicates that the enrollment of the school is greater than the capacity of the permanent building(s) and instructional space by more than 5 percent.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, Survey on the Condition of Public School Facilities, 1999.

table 8), this percentage also varied based upon the relationship between school enrollment and capacity (figure 9). Schools that were overcrowded were more likely than schools that were underenrolled or within 5 percent of their capacity to have at least one environmental feature in unsatisfactory condition (53 percent versus 41 percent and 39 percent, respectively). Thus, schools that were overcrowded were more likely to report facilities in less than adequate or unsatisfactory condition.

A closer examination of the adequacy of individual building features and satisfaction with individual environmental factors reveals the specifics of the poorer conditions of overcrowded schools compared with underenrolled schools and schools enrolled at their capacity, which tend to be similar to each other in condition. Among schools reporting at least one building feature to be in less than adequate condition, overcrowded schools reported significantly more features, on average, in less than adequate condition than did schools that were underenrolled (4.5 compared with 3.5; figure 10). Schools with at least one unsatisfactory environmental factor reported, on average, between 2.4 and 2.9 unsatisfactory features, which did not differ significantly from each other.

Regarding the adequacy of specific building features, for all features except roofs and plumbing, overcrowded schools were significantly more likely than underenrolled schools to report the feature as less than adequate (table 20). Overcrowded schools were also more likely than schools within 5 percent of their capacity to report framing, floors and foundations, heating, ventilation, and air conditioning, and electric power to be less than adequate. Thus, overcrowded schools are generally more likely than other schools, particularly underenrolled schools, to suffer from a number of inadequate building features.

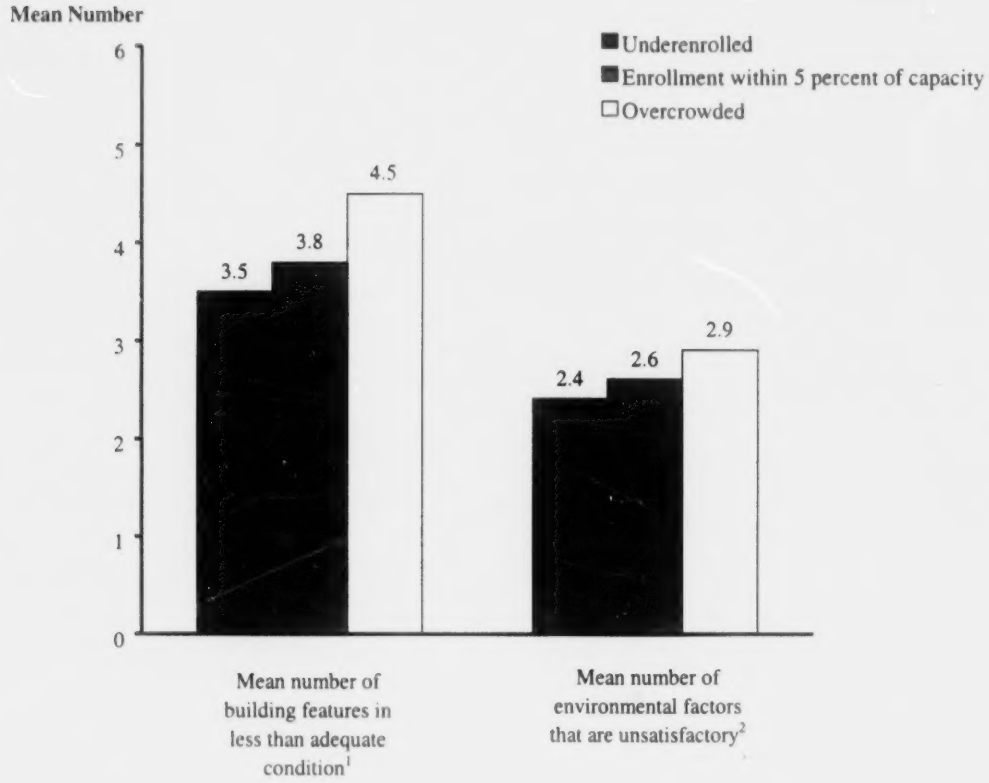
Although there were no significant differences in the mean number of unsatisfactory environmental factors based upon the enrollment to capacity ratio categories of the schools, overcrowded schools were more likely than other schools to report some environmental features as unsatisfactory (table 21). Overcrowded schools were more likely than either schools within 5 percent of their capacity and underenrolled schools to report unsatisfactory ventilation (38 percent compared with 24 and 23 percent). Overcrowded schools were also more likely than underenrolled schools to report unsatisfactory heating (25 percent versus 14 percent). Overcrowded schools were more likely than schools within 5 percent of their capacity to report unsatisfactory acoustics (25 percent versus 13 percent). The apparent differences between overcrowded and underenrolled schools in the likelihood of reporting unsatisfactory lighting, indoor air quality, or physical security based upon their enrollment to capacity ratio category were not statistically significant.

School Practices Used to Ease Overcrowding

Schools that suffer from overcrowding may utilize a number of strategies to ease the crowding. These strategies include modifying how physical structures are used, including investment in portable classrooms or using as classroom space rooms originally intended for noninstructional purposes. Other strategies utilize scheduling options, including staggered lunch schedules, year-round schedules, and split-day schedules. Because some of these practices may be used for purposes unrelated to overcrowding (e.g., providing additional instructional time or enrichment classes), respondents were asked to indicate whether the school used each practice, and if so, the extent to which the practice was used to ease overcrowding. The percentages of public schools nationwide that used each of these practices, and the extent to which the practice was used to alleviate overcrowding, are shown in table 22.

Among the most common of the practices used by schools were strategies based on how space is used. Overall, 36 percent of schools reported using portable classrooms, and 20 percent

Figure 10.—Mean number of building features in less than adequate condition and mean number of environmental factors that are unsatisfactory, by enrollment to capacity ratio category: 1999



[1]The condition of all building features is computed across nine building features (e.g., roofs, plumbing). Ratings of less than adequate encompass the ratings of fair, poor, and replace.

[2]The condition of all environmental factors is computed across six environmental factors (e.g., heating, ventilation). Ratings of unsatisfactory include the ratings of unsatisfactory and very unsatisfactory.

NOTE: "Underenrolled" indicates that the capacity of the permanent building(s) and instructional space is greater than student enrollment by more than 5 percent. "Overcrowded" indicates that the enrollment of the school is greater than the capacity of the permanent building(s) and instructional space by more than 5 percent.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, Survey on the Condition of Public School Facilities, 1999.

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Table 20. —Percent of public schools in each enrollment to capacity ratio category rating the condition of building features as less than adequate: 1999

Building feature	Underenrolled[1]	Enrollment within 5 percent of capacity	Overcrowded[2]
Roofs	20	22	29
Framing, floors, foundations	12	12	22
Exterior walls, finishes, windows, doors	20	23	33
Interior finishes, trim	13	18	26
Plumbing	22	25	32
Heating, ventilation, air conditioning	26	28	38
Electric power	18	19	32
Electrical lighting	14	16	28
Life safety features	18	18	28

[1] "Underenrolled" indicates that the capacity of the permanent building(s) and instructional space is greater than student enrollment by more than 5 percent.

[2] "Overcrowded" indicates that the enrollment of the school is greater than the capacity of the permanent building(s) and instructional space by more than 5 percent.

NOTE: Ratings of less than adequate encompass the ratings of fair, poor, and replace.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, Survey on the Condition of Public School Facilities, 1999.

Table 21. —Percent of public schools in each enrollment to capacity ratio category rating the condition of environmental factors as unsatisfactory: 1999

Environmental factor	Underenrolled[1]	Enrollment within 5 percent of capacity	Overcrowded[2]
Lighting	11	12	15
Heating	14	15	25
Ventilation	23	24	38
Indoor air quality	16	18	24
Acoustics or noise control	17	13	25
Physical security of buildings	17	20	25

[1] "Underenrolled" indicates that the capacity of the permanent building(s) and instructional space is greater than student enrollment by more than 5 percent.

[2] "Overcrowded" indicates that the enrollment of the school is greater than the capacity of the permanent building(s) and instructional space by more than 5 percent.

NOTE: Ratings of unsatisfactory include the ratings of unsatisfactory and very unsatisfactory.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, Survey on the Condition of Public School Facilities, 1999.

reported the creation of temporary instructional space (table 22).[45] This translates into about 28,600 schools using temporary classrooms, and 15,700 creating temporary instructional space (not shown in tables). For schools reporting the use of portable classrooms, about half (46 percent) reported doing so to a great extent in order to reduce overcrowding (table 22). Among schools reporting that they created temporary instructional space, one-quarter (26 percent) reported doing so to a great extent in order to reduce crowding, while 34 percent did so to a moderate extent to ease overcrowding, and 38 percent did so to a minor extent. Few schools used off-site instructional facilities (8 percent) or

[45] Nationally, about 6 percent of instructional rooms were in temporary structures, and about 3 percent of instructional rooms were originally designed to serve noninstructional purposes (not shown in tables).

used portable spaces other than for classroom purposes (9 percent). Among those schools that reported using the other space-related practices, about one-fifth of the schools did so to a great extent in order to reduce overcrowding.

Schools may also alter their schedules in order to reduce the number of students in a given space within the school at any given time. The most common of these scheduling practices was the use of staggered lunch schedules (74 percent). Of the schools using staggered lunch schedules, 45 percent reported doing so to a great extent in order to alleviate overcrowding, while 27 percent reported doing so to a moderate extent to ease overcrowding.[46] Very few schools utilized a year-round schedule (5 percent) or a split-day schedule (3 percent). Schools using a year-round schedule were nearly as likely to do so to ease overcrowding to a great extent (40 percent) as they were to do so for other purposes unrelated to crowding (36 percent).

Table 22.—Percent of public schools that report using various space and scheduling practices, and the extent to which the practice is used to alleviate overcrowding: 1999

Space or scheduling practice	School uses practice	Extent of use to alleviate overcrowding[1]			
		Great	Moderate	Minor	Not at all
Spaces used					
Use of portable classrooms	36	46	27	24	3
Creation of temporary instructional space (e.g., in cafeterias or gyms)	20	26	34	38	[2]2
Use of portables for other purposes, such as offices for administration and resource personnel	9	22	25	47	6
Use of off-site instructional facilities	8	20	26	33	20
Scheduling					
Staggered lunch schedules	74	45	27	15	13
Year-round schedule	5	40	12	[2]12	36
Split-day schedules	3	—	—	—	—

— Too few cases for a reliable estimate.

[1]Based on schools that use that practice. Percentages are computed across each row, but may not sum to 100 because of rounding.

[2]Coefficient of variation greater than 50 percent.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, Survey on the Condition of Public School Facilities, 1999.

[46] Note also that the use of staggered lunch schedules may reflect limited capacity of the cafeteria, which may be somewhat independent of the capacity of the school as a whole.

7. SUMMARY AND CONCLUSIONS

The physical condition of schools has been receiving a great deal of attention as press reports indicate crumbling buildings and other signs of deterioration, and concerns mount that the baby-boom echo is causing schools to be overcrowded (e.g., Kozol 1991; U.S. Department of Education 1998). Beyond the general condition of schools are concerns about the adequacy of many environmental factors, including air conditioning and ventilation, noise control, and flexibility of instructional space (e.g., Hansen 1992). Despite the widespread interest in the state of public school facilities, recent nationally representative data regarding the physical condition of schools are scarce. The need for current national data is underscored by observations that the condition of schools varies widely. Some districts have schools deteriorating with age and lack of maintenance, while other districts invest millions of dollars in new, state-of-the-art buildings; the condition of schools within districts may also vary widely. The presence of such extremes highlights the importance of describing the range of physical conditions in America's public school facilities.

This report provides data regarding a broad range of issues concerning school condition. The results presented in this report are based on questionnaire data for 903 public elementary and secondary schools in the United States. The questionnaire responses were weighted to produce national estimates that represent all regular public schools in the United States. Information about the condition of school facilities is based on questionnaire rating scales rather than on physical observation of school conditions by outside observers. Data were collected regarding the adequacy of permanent and temporary school facilities, adequacy of building features that make up schools, and satisfaction with environmental factors, including specific attention to air conditioning. Data were also collected to provide estimates of the total investment in repairs, renovations, and modernizations that would be necessary to bring all public schools into good overall condition. The survey also gathered data pertaining to future plans for construction, repair/renovation, and replacement. Information was also collected about the age of public schools, and about overcrowding at public schools. All comparative statements in this report have been tested for statistical significance and adjusted for multiple comparisons using the Bonferroni adjustment and are significant at the 0.05 level. Throughout this report, differences that may appear large (particularly those by school characteristics) may not be statistically significant. This is due in part to the relatively large standard errors surrounding the estimates (because of the small sample size) and the use of the Bonferroni adjustment. This chapter provides a summary of the findings from this survey, as well as some overall conclusions.

The Overall Condition of Schools and Building Features

Overall, about three-quarters of schools, serving approximately 34 million students, reported that all the types of onsite buildings at their school were in adequate or better condition. However, about one-quarter of schools, enrolling approximately 11 million students, reported at least one of their types of onsite buildings to be in less than adequate condition. Approximately 3.5 million of these students attended schools where at least one type of building was in poor condition or needed to be replaced. The variability in overall condition of schools was not strongly related to characteristics of the school.

While the majority of schools reported being adequate or better overall, it is possible that the condition of important individual building features, such as roofs or electrical systems, may be less than adequate, regardless of the general condition of the school. Overall, 50 percent of schools reported that at least one of nine building

features at their school was in less than adequate condition. Schools reporting any less than adequate feature reported an average of 3.8 building features to be in less than adequate condition. The percent of schools with at least one less than adequate building feature varied by locale, region, and the concentration of poverty in the school (defined as the percent of students eligible for free or reduced-price school lunch). Schools located in central cities were more likely than those in urban fringe areas or large towns to report at least one building feature as less than adequate, as were schools in the West compared with those in the Northeast. Schools with the highest concentration of poverty were more likely than were schools with the two lowest concentrations of poverty to report that at least one building features was less than adequate. When considering individual building features, ratings of less than adequate ranged from 14 percent of schools for framing, floors, and foundations to 29 percent of schools for heating, ventilation, and air conditioning. The condition of specific building features varied somewhat by school characteristics, although the only consistent pattern was for schools in the West to be more likely than schools in the Northeast to report less than adequate conditions on four of the nine building features.

The Cost of Bringing Schools Into Good Overall Condition

Schools that reported on the questionnaire that the condition of any type of building or any building feature was in less than good condition (i.e., was given a rating of adequate, fair, poor, or replace) provided information about the expected cost of the needed repairs, renovations, and modernizations to put the school's onsite buildings into good overall condition. About three-quarters of schools, representing a total of about 59,400 schools, indicated that they needed to spend some money on repairs, renovations, and modernizations to put the school into good overall condition. The total amount needed by schools was estimated to be approximately $127 billion, with an average dollar amount per school of about $2.2 million for schools needing to spend. The average cost per student across all public schools was $2,900 (including schools that reported no need to spend money), and $3,800 among the 76 percent of schools that reported needing to spend money to put the school into good overall condition. Cost per student did not vary by school characteristics.

Satisfaction with Environmental Conditions in Schools

While assessing the overall condition of school buildings and their features provides insight into the physical condition of schools in terms of bricks and mortar, environmental conditions tend to be associated with comfort within the space provided by the physical features. While a majority of public schools reported that each of six environmental conditions within the school were satisfactory, a sizable minority reported that these environmental conditions were unsatisfactory. About a quarter of schools reported ventilation as unsatisfactory, about a fifth of schools reported they were unsatisfied with heating, indoor air quality, acoustics or noise control, and the physical security of buildings, and 12 percent of schools were unsatisfied with lighting conditions. In addition to these six environmental conditions, about a third of schools were unsatisfied with the energy efficiency of the school, and 38 percent were unsatisfied with their flexibility of instructional space. There were no consistent patterns of variation by school characteristics in satisfaction with individual environmental conditions.

Overall, the 43 percent of the schools indicating that at least one of the six environmental factors was in unsatisfactory condition reported an average of 2.6 environmental conditions to be unsatisfactory. The percent of schools reporting at least one unsatisfactory environmental condition varied by locale and concentration of poverty. Schools in rural areas and small towns were more likely than those in urban fringe areas and large towns to report at least one unsatisfactory environmental condition. Schools with the highest concentration of poverty were more likely than those with the lowest concen-

tration of poverty to report at least one unsatisfactory environmental condition.

One environmental factor, air conditioning, is of particular concern, especially in classrooms. While about half of schools indicated that all of their classrooms were air-conditioned, about a quarter of schools reported that none of their classrooms were air-conditioned, but they needed to be. About 60 percent of schools reported that all of their administrative offices, computer labs, and media centers were air-conditioned. About 85 percent of the schools reported that air conditioning, in areas of the school that had it, was satisfactory or very satisfactory.

Plans for Construction, and for Major Repair, Renovation, or Replacement of Building Features

The physical condition of schools is constantly changing: age and use wear them down, maintenance (repair and renovation) and replacement build them back. The majority of schools (about two-thirds) plan for this inevitability with written long-range facilities plans. Regardless of whether the activity was part of a written plan, one-fifth of schools reported plans to build new attached and/or detached permanent additions, and 1 in 10 reported plans to install new temporary buildings within the next 2 years.

About half of the schools planned to make major repairs, renovations, or replacements to at least one building feature in the next 2 years. Overall, 41 percent of schools indicated plans to make major repairs or renovations to at least one building feature, and one-quarter planned to replace at least one building feature in the next 2 years. While plans for repair or renovation in the next 2 years varied by locale and percent minority enrollment, plans for replacing building features did not vary by school characteristics. The more salient factor than school characteristics for future repair, renovation, and replacement was the overall condition of the school buildings or building feature. About half (46 percent) of the schools in adequate or better overall condition reported plans for repair, renovation, or replacement of building features in the next 2 years, compared with two-thirds of schools in less than adequate overall condition. The remaining one-third of schools in less than adequate condition, about 6,300 schools, had no plans for improvements to the features of their buildings. This group of schools may continue to gradually deteriorate over time due to deferred maintenance.

Functional Age of Schools

The physical condition of schools is linked in many people's minds with the age of the school. Concerns that older schools are in more disrepair, lack the necessary infrastructure for advanced telecommunications systems, have inefficient mechanical systems, and may lack modern safety features have raised concern about the age of America's schools. In 1999, public schools in America were built, on average, 40 years ago. Among schools that had been renovated since construction, on average the renovation occurred 11 years ago. The years since construction and since the most recent major renovation were combined to form a measure of the functional age of the school. The functional age was calculated as the years since construction for schools with no major renovations, or the years since the most recent major renovation for school that had completed such projects. The average functional age of schools was 16 years. Overall, about one-third of public schools had a functional age of less than 5 years, 28 percent had a functional age of 5 to 14 years, 26 percent had a functional age of 15 to 34 years, and 14 percent had a functional age of 35 years or more. Thus, about 6 out of 10 schools had a functional age of less than 15 years.

The data suggest that school functional age is related to condition in several ways, with the oldest schools more likely to be in poor condition. Older schools (those with functional ages of 15 years or more) were more likely than younger schools (those with functional ages less than 15 years) to report that at least one type of onsite building was in less than adequate condition, to report at least one building feature to be less than

adequate, and to report at least one unsatisfactory environmental condition.

School plans for making major repairs, renovations, or replacements in the next 2 years varied by the functional age of the school. Schools with functional ages between 15 to 34 years were more likely to report plans for at least one major repair, renovation, or replacement than were schools with younger functional ages. Schools with the oldest functional age (35 years or greater) were as likely to have plans for repair, renovation, or replacement as were the schools with younger functional ages. Thus, even many of the functionally youngest schools were slated for such maintenance work. Many older schools are slated for what are likely necessary improvements, but many are not slated for work that may be overdue. It is possible that this latter group may fall into a category of schools that have been relinquished to the inevitable effects of aging, possibly with the intent of completely replacing the school in the future.

Overcrowding in Schools

As the public school system copes with the baby-boom echo, there is growing concern about the degree of overcrowding existing in at least some schools. This concern is compounded by research on the effects of overcrowding on teacher and student behaviors (e.g., Rivera-Batiz and Marti 1995). Overcrowding occurs when the number of students enrolled in the school is larger than the number of students the school is designed to accommodate. Overall, about half of public schools were underenrolled (approximately 40,500 schools nationwide), about one-quarter were within 5 percent of their capacity (approximately 20,400 schools), and about a quarter were overcrowded (about 17,400 schools), based on the capacity of the permanent instructional buildings and space. The extent of overcrowding varied based upon school instructional level, school size, region, locale, and percent minority enrollment, but did not vary significantly based upon concentration of poverty in the school. Schools in rural areas or small towns were more likely than schools in other areas to be severely underenrolled (underenrolled by more than 25 percent). In addition, the likelihood of being severely underenrolled decreased with the school's enrollment size. Severe overcrowding (enrollments greater than capacity by more than 25 percent) was generally most prevalent among large schools, schools in the West, and schools with more than 50 percent minority enrollment. Overcrowded schools were more likely than other schools to report that at least one type of onsite building was in less than adequate condition, to have at least one building feature in less than adequate condition, and to have at least one environmental factor in unsatisfactory condition.

Schools have a number of strategies to help cope with overcrowding. About a third (36 percent) of schools indicated that they used portable classrooms, and one out of five indicated the use of temporary instructional space, with most reporting using these strategies to a moderate or great extent to alleviate overcrowding. About three-quarters of schools reported using staggered lunch schedules, with 45 percent of them reporting doing so to ease overcrowding to a great extent. However, this may reflect the need for cafeteria space, rather than instructional space, to accommodate student enrollments.

School Facilities and Characteristics of Schools

Several school characteristics of interest for policy development did appear to be related to some of the elements of condition. Specifically, school locale (central city, urban fringe/large town, or rural/small town), concentration of poverty in the school (measured by the percent of students eligible for free or reduced-price lunch), percent minority enrollment, and school size each appear to be related to school conditions in some way, although strong and consistent patterns of variation across many school conditions did not emerge in this study. Additionally, geographic region was related to some aspects of school condition. These are discussed more fully below.

When differences between schools' condition emerged based upon school locale, they sometimes supported the popular perception that schools located in central cities are in worse condition than are schools elsewhere (e.g., Corcoran, Walker, and White 1988). However, when these differences between central city schools and other schools appeared, they tended to be between schools in central cities and those in urban fringe areas and large towns, and not between central city and rural and small town schools. Schools in central cities were more likely than those in urban fringe areas and large towns to report at least one building feature in less than adequate condition and more likely to report the need to spend money to bring the school into good overall condition. Additionally, the data revealed several ways in which the condition of rural and small town schools is different from that of other schools. For example, schools in rural areas and small towns were more likely than schools in urban fringe and large town areas to indicate that at least one environmental factor was unsatisfactory. Schools in rural areas and small towns were more likely than schools in urban fringe areas or large towns to report unsatisfactory acoustics, and were more likely than schools in both urban fringe areas and large towns and schools in central cities to report being unsatisfied with the physical security of buildings. Finally, schools in rural areas and small towns were more likely than schools in other areas to be severely underenrolled.

Schools located in impoverished communities are generally believed to be at greater risk for being in poorer condition. Schools with 70 percent or more of their students eligible for free or reduced-price lunch were more likely than schools with less than 40 percent of their students eligible for free or reduced-price lunch to report at least one building feature to be in less than adequate condition, and more likely to report that permanent additions were in less than adequate condition. Schools with 70 percent or more of their students eligible for free or reduced-price lunch were more likely than schools with less than 20 percent of their students eligible for free or reduced-price lunch to report roofs to be in less than adequate condition. Schools with the highest concentration of poverty were also more likely than schools with the lowest concentration of poverty to report at least one environmental factor to be unsatisfactory.

Schools with high concentrations of minority students are also typically depicted as being in worse condition than schools with lower proportions of minority students (e.g., Lowe 1996). When considering specific building features and environmental factors, two differences emerged, both showing a higher percentage of schools with more than 50 percent minority enrollment indicating the feature to be in less than adequate condition. Specifically, schools with more than 50 percent minority enrollment were more likely than schools with 21 to 50 percent minority enrollment to report inadequate exterior walls, finishes, windows, or doors, and schools with greater than 50 percent minority enrollment were more likely than all other schools to report inadequate electric power. Moreover, schools with more than 50 percent minority enrollment were generally more likely than schools with lower concentrations of minority students to be severely overcrowded.

School size, as indicated by current school enrollment, was also related to several dimensions of school condition (specific environmental factors, school functional age, and overcrowding). Medium schools were more likely than large schools to report unsatisfactory ventilation and acoustics, and small and medium schools were more likely than large schools to report that their classrooms needed air conditioning. School size was also related to the functional age of the school. On average, small schools had older functional ages than medium or large schools. Additionally, large schools were more likely than small schools to have a functional age of less than 5 years, and small schools were more likely than large schools to have a functional age between 15 and 34 years. Finally, current school size was related to the degree to which the school was underenrolled or overcrowded. Small schools were more likely than medium schools, which in turn were more likely than large schools, to be underenrolled by more than 25 percent. Medium and large schools were more likely than small schools to be within 5 percent of their capacity, and large schools were

more likely than medium and small schools to be overcrowded by more than 25 percent.

A number of differences between schools based upon their geographic region emerged, all indicating that the condition of schools in the West may be worse than elsewhere in the country. Although the overall condition of onsite buildings did not vary based upon region, schools in the West were more likely than schools in the Northeast to report that at least one building feature was in less than adequate condition. Schools in the West were also more likely than schools in the Northeast to indicate four of nine building features to be in less than adequate condition. In addition, schools in the West were more likely than schools in the South or Northeast to indicate the need to spend money to bring the school into good overall condition. Schools in the West were also more likely to be severely overcrowded than schools in other regions, and were also more likely than schools elsewhere to have temporary buildings as part of the school. Finally, schools in the West were also more likely to indicate plans to install new temporary structures in the next 2 years.

Conclusions

Data from this survey suggest that although the majority of America's public schools are in adequate or better condition, a sizable minority are not. Approximately one-quarter of the schools reported at least one type of onsite building in less than adequate condition, half reported that their schools had building features in need of repair, and 4 out of 10 reported unsatisfactory environmental conditions. Data regarding the functional age of schools and their condition suggest that the oldest schools are the most in need of attention, but many of these schools do not have plans for improvement. The data also suggest that while three-quarters of schools do not have a problem with overcrowding, the remaining schools are overcrowded and close to 10 percent have enrollments that are more than 25 percent over the capacity of the school's permanent buildings. These data, then, provide a complex portrait of the current physical condition and crowding of America's public schools. Although the majority of schools are in adequate condition, functionally young, and not overcrowded, a substantial number of schools are in poor condition, and some of them suffer from age and overcrowding. Past experience suggests that it will be costly to correct these problems.

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Appendix A

Survey Methodology

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Fast Response Survey System

The Fast Response Survey System (FRSS) was established in 1975 by the National Center for Education Statistics (NCES), U.S. Department of Education. FRSS is designed to collect small amounts of issue-oriented data with minimal burden on respondents and within a relatively short timeframe. Surveys are generally limited to three pages of questions, with a response burden of about 30 minutes per respondent. Sample sizes are relatively small (usually about 1,000 to 1,500 respondents per survey) so that data collection can be completed quickly. Data are weighted to produce national estimates of the sampled education sector. The sample size permits limited breakouts by classification variables. However, as the number of categories within the classification variables increases, the sample size within categories decreases, which results in larger sampling errors for the breakouts by classification variables. FRSS collects data from state education agencies, local education agencies, public and private elementary and secondary schools, public school teachers, and public libraries.

Sample Selection

The sample for the FRSS survey on the condition of public school facilities consisted of 1,004 regular public elementary, middle, and high schools in the 50 states and the District of Columbia. The sample was selected from the 1996-97 NCES Common Core of Data (CCD) School Universe File. The sampling frame constructed consisted of 80,238 regular public schools. Excluded from the sampling frame were special education, vocational, and alternative/other schools, schools in the territories, and schools with a high grade lower than one or ungraded. The frame contained 49,266 regular elementary schools, 14,808 regular middle schools, and 16,164 regular high/combined schools. A school was defined as an elementary school if the lowest grade was less than or equal to grade 3 and the highest grade was less than or equal to grade 8. A middle school was defined as having a lowest grade greater than or equal to grade 4 and a highest grade less than or equal to grade 9. A school was considered a high school if its lowest grade was less than or equal to grade 9 and the highest grade was greater than or equal to grade 10. Combined schools were defined as having a lowest grade less than or equal to grade 3 and a highest grade greater than or equal to grade 9 *or* the lowest grade is in grades 4 through 8 and the highest grade is in grades 10 through 12. High schools and combined schools were combined into one category for sampling.

The public school sampling frame was stratified by instructional level (elementary, middle, and high school/combined), locale (city, urban fringe, town, rural), and school size (less than 300, 300 to 499, 500 to 999, and 1,500 or more). Within the primary strata, schools were also sorted by geographic region and percent minority enrollment in the school to produce additional implicit stratification. Within each primary stratum, the specified sample size was then allocated to size classes in rough proportion to the aggregate square root of the enrollment of the schools in the class. After the stratum sample sizes were determined, a sample of 1,004 schools was then selected systematically from the sorted file using independent random starts. The sample contained 401 elementary schools, 301 middle schools, and 302 high/combined schools. The 1,004 schools were located in 838 school districts.

Respondent and Response Rates

Questionnaires and cover letters were mailed in early July 1999. While individual elementary, middle, and high schools were sampled, the questionnaires were mailed to the districts with which the schools were associated. A separate questionnaire was enclosed for each sampled school. This is the same approach used by the U.S. General Accounting Office (GAO) to conduct their study of school facilities in 1994. The cover letter indicated that the survey was designed to be completed by district-level personnel who were very familiar with the school facilities in the district. Often this was a district

facilities coordinator (although the title of the position varied). The letter indicated that the respondent might want to consult with other district-level personnel or with school-level personnel, such as the principal of the selected school, in answering some of the questions. The respondent section on the front of the questionnaire indicated that while most questionnaires were completed by district-level respondents, some were completed by school-level respondents (usually the school principal). To maintain the focus on schools, which are the sampled unit, the report refers to schools indicating or reporting various findings, even though respondents were primarily district-level personnel reporting about the sampled school.

Telephone followup was conducted from late July through September 1999 with districts that did not respond to the initial questionnaire mailing. Of the 1,004 schools selected for the sample, 14 were found to be out of the scope of the survey, usually because the school was no longer in existence. This left a total of 990 eligible schools in the sample. Completed questionnaires were received for 903 schools, or 91 percent of the eligible schools. The weighted response rate was also 91 percent. Weighted item nonresponse rates for individual questionnaire items ranged from 0 percent to 0.7 percent. Because the item nonresponse rate was so low, imputation for item nonresponse was not implemented.

Sampling and Nonsampling Errors

The responses were weighted to produce national estimates (see table A-1). The weights were designed to adjust for the variable probabilities of selection and differential nonresponse. The findings in this report are estimates based on the sample selected and, consequently, are subject to sampling variability.

The survey estimates are also subject to nonsampling errors that can arise because of nonobservation (nonresponse or noncoverage) errors, errors of reporting, and errors made in data collection. These errors can sometimes bias the data. Nonsampling errors may include such problems as misrecording of responses; incorrect editing, coding, and data entry; differences related to the particular time the survey was conducted; or errors in data preparation. While general sampling theory can be used in part to determine how to estimate the sampling variability of a statistic, nonsampling errors are not easy to measure and, for measurement purposes, usually require that an experiment be conducted as part of the data collection procedures or that data external to the study be used.

To minimize the potential for nonsampling errors, the questionnaire was pretested with respondents like those who completed the survey. During the design of the survey and the survey pretest, an effort was made to check for consistency of interpretation of questions and to eliminate ambiguous items. The questionnaire and instructions were extensively reviewed by the National Center for Education Statistics and the Office of the Under Secretary, U.S. Department of Education. Manual and machine editing of the questionnaire responses were conducted to check the data for accuracy and consistency. Cases with missing or inconsistent items were recontacted by telephone. Data were keyed with 100 percent verification.

Variances

The standard error is a measure of the variability of estimates due to sampling. It indicates the variability of a sample estimate that would be obtained from all possible samples of a given design and size. Standard errors are used as a measure of the precision expected from a particular sample. If all possible samples were surveyed under similar conditions, intervals of 1.96 standard errors below to 1.96 standard errors above a particular statistic would include the true population parameter being estimated in about 95 percent of the samples. This is a 95 percent confidence interval. For example, the estimated percentage of schools with all building types in adequate or better condition is 76.1 percent, and the estimated standard error is 1.8 percent. The 95 percent confidence interval for the statistic extends from [76.1 – (1.8 times 1.96)] to [76.1 +

Table A-1. Number and percentage distribution of public schools in the study, and the estimated number and percentage distribution in the nation, by school characteristics: 1999

School characteristic	Respondent sample		National estimate	
	Number	Percent	Number	Percent
All public schools	903	100	78,313	100
School instructional level				
Elementary school	580	64	59,940	77
High school	286	32	15,505	20
Combined	37	4	2,867	4
School enrollment size				
Less than 300	129	14	18,095	23
300 to 599	300	33	31,942	41
600 or more	474	52	28,275	36
Locale				
Central city	250	28	21,294	27
Urban fringe/large town	349	39	27,846	36
Rural/small town	304	34	29,173	37
Region				
Northeast	147	16	13,210	17
Midwest	244	27	22,843	29
South	321	36	26,358	34
West	191	21	15,901	20
Percent minority enrollment				
5 percent or less	256	28	24,676	32
6 to 20 percent	208	23	17,831	23
21 to 50 percent	213	24	17,025	22
More than 50 percent	226	25	18,781	24
Percent of students in school eligible for free or reduced-price school lunch				
Less than 20 percent	261	29	21,216	27
20 to 39 percent	252	28	20,915	27
40 to 69 percent	232	26	20,947	27
70 percent or more	158	17	15,234	19

NOTE: Details may not sum to totals because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, Survey on the Condition of Public School Facilities, 1999.

(1.8 times 1.96)], or from 72.6 to 79.6 percent. Tables of standard errors for each table and figure in the report are provided in appendix B.

Estimates of standard errors were computed using a technique known as jackknife replication. As with any replication method, jackknife replication involves constructing a number of subsamples (replicates) from the full sample and computing the statistic of interest for each replicate. The mean square error of the replicate estimates around the full sample estimate provides an estimate of the variances of the statistics. To construct the replications, 50 stratified subsamples of the full sample were created and then dropped one at a time to define 50 jackknife

replicates. A computer program (WesVarPC) was used to calculate the estimates of standard errors. WesVarPC is a stand-alone Windows application that computes sampling errors for a wide variety of statistics (totals, percents, ratios, log-odds ratios, general functions of estimates in tables, linear regression parameters, and logistic regression parameters).

The test statistics used in the analysis were calculated using the jackknife variances and thus appropriately reflected the complex nature of the sample design. In particular, an adjusted chi-square test using Satterthwaite's approximation to the design effect was used in the analysis of the two-way tables. Finally, Bonferroni adjustments were made to control for multiple comparisons where appropriate. For example, for an "experiment-wise" comparison involving g pairwise comparisons, each difference was tested at the 0.05/g significance level to control for the fact that g differences were simultaneously tested. The Bonferroni adjustment results in a more conservative critical value being used when judging statistical significance. This means that comparisons that would have been significant with a critical value of 1.96 may not be significant with the more conservative critical value. For example, the critical value for comparisons between any two of the four categories of poverty concentration is 2.64, rather than 1.96. This means that there must be a larger difference between the estimates being compared for there to be a statistically significant difference.

Definitions of Analysis Variables

Categories of the analysis variables are those used by GAO for their 1994 study.

School instructional level – Schools were classified according to their grade span in the 1996-97 Common Core of Data (CCD) School Universe File.

Elementary school – had grade 6 or lower and no grade higher than grade 8.

Secondary school – had no grade lower than grade 7 and had grade 7 or higher.

Combined school – had grades higher than grade 8 and lower than grade 7.

School enrollment size – total number of students enrolled on October 1, 1998, based on responses to question 17 on the survey questionnaire.

Less than 300 students

300 to 599 students

600 or more students

Locale – as defined in the 1996-97 Common Core of Data (CCD).

Central city – a large or mid-size central city of a Metropolitan Statistical Area (MSA).

Urban fringe/large town – urban fringe is a place within an MSA of a central city, but not primarily its central city; large town is an incorporated place not within an MSA, with a population greater than or equal to 25,000.

Small town/rural – small town is an incorporated place not within an MSA, with a population less than 25,000 and greater than or equal to 2,500; rural is a place with a population less than 2,500 and/or a population density of less than 1,000 per square mile, and defined as rural by the U.S. Bureau of the Census.

Geographic region –

Northeast - Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania

Midwest - Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, Kansas

South - Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina,

Georgia, Florida, Kentucky, Tennessee, Alabama, Mississippi, Arkansas, Louisiana, Oklahoma, Texas

West - Montana, Idaho, Wyoming, Colorado, New Mexico, Arizona, Utah, Nevada, Washington, Oregon, California, Alaska, Hawaii

Percent minority enrollment in the school – The percent of students enrolled in the school whose race or ethnicity is classified as one of the following: American Indian or Alaskan Native, Asian or Pacific Islander, black, or Hispanic, based on data in the 1996-97 CCD file.

5 percent or less

6 to 20 percent

21 to 50 percent

More than 50 percent

Percent of students at the school eligible for free or reduced-price lunch – This was based on responses to question 20 on the survey questionnaire; if it was missing from the questionnaire, it was obtained from the 1996-97 CCD file. This item served as the measurement of the concentration of poverty at the school.

Less than 20 percent

20 to 39 percent

40 to 69 percent

70 percent or more

It is important to note that many of the school characteristics used for independent analyses may also be related to each other. For example, enrollment size and instructional level of schools are related, with secondary schools typically being larger than elementary schools. Similarly, poverty concentration and minority enrollment are related, with schools with a high minority enrollment also more likely to have a high concentration of poverty. Other relationships between analysis variables may exist. Because of the relatively small sample size used in this study, it is difficult to separate the independent effects of these variables. Their existence, however, should be considered in the interpretation of the data presented in this report.

Comparisons to the 1994 U.S. General Accounting Office Study

The U.S. General Accounting Office (GAO) conducted a study in 1994 on the condition of public school facilities. The sample for the GAO survey was the public school sample from the NCES 1993-94 Schools and Staffing Survey (SASS). In May 1994, GAO mailed questionnaires for 9,956 sampled schools to the 5,459 districts in which these schools were located. While individual schools were sampled, the questionnaires were mailed to the districts with which the schools were associated. A separate questionnaire was enclosed for each sampled school. Completed questionnaires were accepted through early January 1995. Of the 9,956 schools in the sample, 393 were found to be ineligible, resulting in an adjusted sample of 9,563 schools. There were 7,478 completed, usable questionnaires returned to GAO, for a school response rate of 78 percent. The responses were weighted to adjust for nonresponse and produce national estimates.

Many of the items on the FRSS questionnaire were taken directly from the questionnaire used by GAO in 1994. The same questionnaire items and analysis variables were used with the intention of providing information about change in the condition of public school facilities between 1994 when GAO conducted its survey and 1999 when NCES conducted its survey. However, the GAO information included in this report is provided as contextual information only. Statistical comparisons are not provided because GAO does not provide standard errors for the data in their reports, and exact point estimates are also missing for some comparative statements from the GAO reports.

In addition, in some cases the data are not completely comparable between the two studies. In particular, the way in which the cost estimates were obtained differed in the two studies. Both studies used the same wording for the cost

question, which asked what would probably be the total cost of all repairs, renovations, and modernizations required to put the school's onsite buildings into good overall condition. In the FRSS study, schools that reported in the first question on the survey that the condition of any type of onsite building (original building, permanent addition, or temporary building) *or any building feature* (e.g., roofs, plumbing, electric power) was less than good (i.e., was given a rating of adequate, fair, poor, or replace) provided information about the cost of the needed repairs, renovations, and modernizations. The GAO study, however, asked about the condition of the types of onsite buildings, followed by the question about the cost to bring the onsite buildings into good overall condition. The question about the condition of various building features was asked several pages later in the GAO study. Thus, even though the wording of the cost question was the same in the FRSS and GAO studies, the two studies may include costs for different things, since respondents to the GAO study were not explicitly prompted to include costs associated with building features. However, since building features (e.g., roofs and plumbing) are important aspects of the condition of buildings, respondents to the GAO study may have included costs associated with these features in their cost estimates. Because of the methodological differences between the two studies, the cost estimates from them should not be directly compared.

When the FRSS data are reanalyzed to include only those schools that reported on the questionnaire that the condition of any type of onsite building was less than good, the percentage of schools that reported needing to spend money to bring the onsite buildings into good overall condition drops from 76 percent to 52 percent. The total amount needed for the repairs, renovations, and modernizations for this group of schools was estimated to be approximately $111 billion, down from the approximately $127 billion needed by the schools with any type of building *or any building feature* in less than good condition.[47] However, the data are still not completely comparable to the GAO study due to the different ordering of the questions.

GAO also presented two cost estimates based on data from their 1994 study: $112 billion and $101 billion (U.S. GAO 1995a). GAO derived the estimate of $112 billion by summing the amount reported for the cost of all repairs, renovations, and modernizations to put schools into good overall condition (estimated at $101 billion), and the amounts reported that would need to be spent in the next 3 years to comply with various federal mandates, such as asbestos removal and accessibility for students with disabilities (estimated at $11 billion). The $101 billion and the $11 billion were collected in two separate questions at different points in the survey. It is possible that the $112 billion includes some duplication of money needed, since the $11 billion needed to comply with federal mandates may or may not have been included by respondents in the $101 billion needed to put schools into good overall condition. The FRSS survey did not collect information about spending on federal mandates.

When the 1994 GAO estimate of $101 billion needed for repairs, renovations, and modernizations is adjusted for inflation to 1999 dollars, the inflation-adjusted estimate is $112 billion needed for repairs, renovations, and modernizations.[48] However, since GAO does not provide either a confidence interval or a standard error for the estimate of $101 billion dollars, it is not possible to do a statistical test of differences between the FRSS and GAO estimates.

Other cost estimates provided in the GAO reports include a combined dollar estimate for both the amount needed for repairs, renovations, and modernizations, and the amount needed to

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[47] The standard error for the 52 percent of schools that needed to spend money is 1.7. The standard error for the $111 billion is 7.1 billion.

[48] This inflation-adjusted estimate of $112 billion should not be confused with the estimate of $112 billion that GAO derived in 1994 by combining the estimate of $101 billion needed for repairs, renovations, and modernizations with the estimate of $11 billion needed to comply with federal mandates.

comply with federal mandates. For example, GAO reports that 84 percent of schools needed to spend money, and of those schools needing to spend money, the average amount needed per school was $1.7 million (U.S. GAO 1996). However, the percentage of schools needing to spend money and the estimate of $1.7 million includes money needed to comply with federal mandates. GAO does not report the percentage of schools needing to spend money or an average amount needed per school for just repairs, renovations, and modernizations, which is what is reported for the FRSS survey.

GAO also reports more differences by school characteristics than are found in the FRSS study. For example, according to GAO, "...on every measure—proportion of schools reporting inadequate buildings, inadequate building features, and unsatisfactory environmental conditions; proportion of schools reporting needing to spend above the national average; and number of students attending these schools—the same subgroups consistently emerged as those with the most problems. These subgroups included central cities, the western region of the country, large schools, secondary schools, schools reporting student populations of at least 50.5 percent minority students, and schools reporting student populations of 70 percent or more poor students. The differences between subgroups, however, were often relatively small." (U.S. GAO 1996, p. 2). However, GAO provides no information about whether statistical testing was done, and if so, what critical values were used to indicate statistically significant differences. In addition, the sample size in the GAO study was much larger than in the FRSS study (7,478 versus 903 respondents). Estimates from larger samples typically have smaller standard errors than estimates from smaller samples; consequently, smaller differences tend to be statistically significant in surveys with larger samples compared to the same differences in surveys with smaller samples. Thus, the "relatively small" differences that GAO refers to would be more likely to be significantly different in the GAO study than in the FRSS study in any statistical testing that was done. That is, FRSS may have identified fewer differences as significant while the GAO study may have identified more differences as significant only as a function of differences in sample size.

Comparisons to the 2000 National Education Association Study

The National Education Association (NEA) recently published a report that provided a cost estimate of $322 billion needed for school modernization (NEA 2000). The study on which this report is based differs in many ways from the FRSS study. The major difference is what is included in this estimate. The NEA estimate has two components: funds for school infrastructure needs (estimated at $268 billion), and funds for education technology needs (estimated at $54 billion). School infrastructure needs consisted of new school construction (including the buildings, grounds [purchase, landscaping, and paving], and the fixtures, major equipment, and furniture necessary to furnish it); additions to existing facilities (including the fixtures, major equipment, and furniture necessary to furnish it); renovation of an existing facility; retrofitting of an existing facility (including for technology readiness, such as phone lines and fiber optic cable); deferred maintenance (maintenance necessary to bring a school facility up to good condition, or to replace a facility if it is in such poor condition that it cannot be brought up to good condition); and major improvements to grounds, such as landscaping and paving. Education technology needs consisted of computers and peripherals; software; connectivity (including Internet access); networks; technology infrastructure (including electrical upgrades, and wiring and cables to, within, and between schools); distance education; maintenance and repair of technology equipment; and technology-related professional development and support for teachers. In contrast, the FRSS study asked for an estimate of the total cost of all repairs, renovations, and modernizations required to put the school's onsite buildings into good overall condition. Thus, the cost estimate from the FRSS study encompasses only a small part of what is included in the cost estimate from the NEA study.

In addition, the two studies obtained information in very different ways. The FRSS study was designed to be completed about sampled schools by district-level personnel who were very familiar with the school facilities in the district, in consultation with school-level personnel if necessary. These data were then weighted to produce national estimates that represent all regular public schools in the United States. In contrast, the NEA report obtained state-level data from numerous sources to come up with their cost estimate. These sources included policy and research literature, policy and research databases, the NEA annual *Survey of State School Finance Legislation*, and the NEA *Modernization Needs Assessment Questionnaire*, conducted in 1999. It should also be noted that while NEA describes their study as a 50-state report of school modernization needs, the study received usable responses about school infrastructure from only 24 states, and about education technology from only 2 states. The remaining data were derived by various estimation techniques. The FRSS study, on the other hand, had a 91 percent response rate, and used a weighting process designed to adjust for variable probabilities of selection and differential nonresponse.

Background Information

The survey was performed under contract with Westat, using the Fast Response Survey System (FRSS). Westat's Project Director was Elizabeth Farris, and the Survey Managers were Laurie Lewis and Kyle Snow. Bernie Greene was the NCES Project Officer. The data were requested by the Office of the Under Secretary, U.S. Department of Education. Within the Office of the Under Secretary, input was provided by Thomas Corwin, James Houser, and Stephanie Stullich.

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Appendix B

Tables of Standard Errors

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Table 1a.—Standard errors of the percent of public schools with each type of building, and the percentage distribution of ratings of the overall condition of the building types: 1999

Type of building	School has building type	Overall condition							
		Adequate or better				Less than adequate			
		Total	Excellent	Good	Adequate	Total	Fair	Poor	Replace
Original buildings	0.2	1.6	1.4	1.7	1.5	1.6	1.1	1.0	0.6
Permanent additions	1.8	1.8	2.1	2.1	1.7	1.8	1.3	1.1	0.4
Temporary buildings	2.0	2.2	1.8	2.8	2.3	2.2	1.7	1.3	0.4

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, Survey on the Condition of Public School Facilities, 1999.

Table 2a.—Standard errors of the percent of public schools with each type of building, and the percent rating each building type in less than adequate condition, by school characteristics: 1999

School characteristic	Original buildings		Permanent additions		Temporary buildings	
	School has building type	Less than adequate condition	School has building type	Less than adequate condition	School has building type	Less than adequate condition
All public schools	0.2	1.6	1.8	1.8	2.0	2.2
School instructional level						
Elementary school	0.1	1.8	2.2	2.1	2.5	2.4
High school	0.8	2.3	2.9	2.5	2.9	4.5
Combined	(+)	5.3	6.6	6.6	7.4	—
School enrollment size						
Less than 300	0.7	3.8	4.7	3.5	4.3	—
300 to 599	(+)	2.4	3.2	2.7	3.1	3.5
600 or more	0.2	2.0	2.2	2.4	2.5	3.0
Locale						
Central city	(+)	2.7	3.4	3.6	3.6	3.8
Urban fringe/large town	(+)	2.6	2.9	2.8	3.1	3.4
Rural/small town	0.5	2.5	2.8	2.5	2.9	4.1
Region						
Northeast	(+)	3.6	4.0	4.0	3.7	—
Midwest	(+)	2.8	3.5	2.7	3.2	6.8
South	(+)	2.5	2.9	3.4	3.4	3.1
West	0.8	3.9	3.7	4.1	4.1	3.7
Percent minority enrollment						
5 percent or less	0.5	3.2	3.0	3.4	3.1	4.3
6 to 20 percent	0.2	3.5	3.5	3.2	4.0	5.3
21 to 50 percent	(+)	2.7	3.8	4.6	3.8	3.7
More than 50 percent	(+)	3.0	3.4	3.5	4.2	4.1
Percent of students in school eligible for free or reduced-price school lunch						
Less than 20 percent	0.6	3.1	3.3	2.3	3.3	4.4
20 to 39 percent	(+)	2.4	3.7	3.3	3.0	3.9
40 to 69 percent	(+)	2.5	3.5	3.2	3.7	3.3
70 percent or more	(+)	4.2	4.4	5.1	4.6	5.3

(+) Estimate of standard error is not derived because it is based on a statistic estimated at 100 percent.

— Too few cases for a reliable estimate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, Survey on the Condition of Public School Facilities, 1999.

Table 3a.—Standard errors of the number and percentage distributions of public schools and enrollments according to the condition of all onsite building types: 1999

Condition of all onsite building types	Schools		Students	
	Percentage distribution	Number	Percentage distribution	Number
All public schools	(+)	632.1	(+)	575,270.9
Schools with all building types in adequate or better condition	1.8	1,416.2	1.7	664,518.3
Schools with at least one type of building in less than adequate condition	1.8	1,406.8	1.7	822,941.3

(+) Estimate of standard error is not derived because it is based on a statistic estimated at 100 percent.

NOTE: Standard errors are computed on unrounded numbers.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, Survey on the Condition of Public School Facilities, 1999.

Table 4a.—Standard errors of the percent of public schools rating the condition of building features as less than adequate, by school characteristics: 1999

School characteristic	At least one building feature is in less than adequate condition	Roofs	Framing, floors, foundations	Exterior walls, finishes, windows, doors	Interior finishes, trim	Plumbing	Heating, ventilation, air conditioning	Electric power	Electrical lighting	Life safety features
All public schools	1.5	1.7	1.3	1.5	1.4	1.7	1.5	1.4	1.5	1.3
School instructional level										
Elementary school	1.9	1.9	1.6	1.9	1.7	1.9	1.8	1.8	1.9	1.6
High school	3.0	3.1	2.2	2.7	2.3	2.7	2.5	2.6	2.3	2.8
Combined	9.0	6.3	6.8	8.8	5.5	7.0	9.1	7.0	8.6	9.0
School enrollment size										
Less than 300	4.6	3.8	3.1	3.9	3.2	4.4	3.8	3.5	3.2	4.1
300 to 599	2.9	2.9	2.3	2.6	2.4	3.2	2.9	2.9	2.7	2.4
600 or more	2.3	1.9	1.8	1.8	2.1	2.1	1.8	1.8	1.8	1.7
Locale										
Central city	3.7	3.2	2.5	3.1	3.2	3.4	3.0	2.9	2.7	2.9
Urban fringe/large town	3.2	2.6	1.9	2.5	2.1	2.3	2.5	2.2	2.0	2.1
Rural/small town	2.6	2.9	2.5	3.0	2.4	2.5	2.7	2.4	2.3	2.9
Region										
Northeast	4.5	2.7	2.5	2.7	3.1	3.7	3.4	2.8	2.9	3.0
Midwest	3.1	2.7	2.6	3.0	2.4	2.8	2.8	2.8	2.5	2.8
South	2.9	2.9	2.5	2.6	2.6	2.8	2.4	2.6	3.2	3.0
West	3.8	3.8	2.8	3.3	2.9	3.7	4.4	3.8	3.7	3.4
Percent minority enrollment										
5 percent or less	3.3	2.8	2.9	3.2	2.4	2.8	2.9	2.6	2.1	2.8
6 to 20 percent	4.1	3.8	3.0	3.4	2.7	3.8	3.5	2.9	2.8	3.5
21 to 50 percent	3.9	3.0	2.4	2.7	3.0	3.7	3.7	3.3	3.3	3.5
More than 50 percent	3.4	3.7	2.5	3.2	3.2	3.3	3.4	3.8	4.0	2.9
Percent of students in school eligible for free or reduced-price school lunch										
Less than 20 percent	3.4	2.9	2.4	2.6	2.5	3.1	3.0	2.5	2.1	2.6
20 to 39 percent	3.7	2.8	2.3	2.8	2.4	2.8	2.7	2.4	2.3	2.1
40 to 69 percent	3.3	2.9	2.3	2.6	2.6	3.4	2.8	2.6	2.7	3.3
70 percent or more	4.5	4.6	3.9	4.4	4.2	4.3	4.2	4.6	5.2	3.5

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, Survey on the Condition of Public School Facilities, 1999.

Table 5a.—Standard errors of the percent of public schools reporting the need to spend money on repairs, renovations, and modernizations to bring the school into good overall condition, and the cost per student of the repairs, renovations, and modernizations, by school characteristics: 1999

School characteristic	Percent of schools reporting needing to spend	Cost per student	Cost per student at schools needing to spend money
All public schools	1.5	158.9	191.9
School instructional level			
Elementary school	1.7	159.1	217.1
High school	2.8	379.3	442.3
Combined	7.0	2,026.9	2,222.7
School enrollment size			
Less than 300	3.6	602.4	702.2
300 to 599	2.3	375.8	503.2
600 or more	2.0	220.0	288.2
Locale			
Central city	2.7	326.5	384.3
Urban fringe/large town	3.1	251.1	335.4
Rural/small town	2.1	339.0	441.9
Region			
Northeast	3.9	602.1	821.0
Midwest	3.0	286.6	354.0
South	2.6	189.5	260.6
West	2.8	416.1	477.7
Percent minority enrollment			
5 percent or less	2.9	418.6	590.1
6 to 20 percent	3.1	273.3	324.9
21 to 50 percent	3.5	358.0	524.8
More than 50 percent	2.7	255.2	284.9
Percent of students in school eligible for free or reduced-price school lunch			
Less than 20 percent	3.2	291.5	427.2
20 to 39 percent	3.2	300.9	382.7
40 to 69 percent	2.7	424.2	509.0
70 percent or more	3.4	325.4	365.9

NOTE: Standard errors are computed on unrounded numbers.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, Survey on the Condition of Public School Facilities, 1999.

Table 6a.—Standard errors of the percent of public schools indicating the sources of cost estimates for all repairs, renovations, and modernizations required to bring the school's onsite buildings into good overall condition: 1999

Source of cost estimate	Percent
Best professional judgment of the respondent	2.0
Capital improvement/facilities master plan, schedule, or budget	1.9
Facilities inspections/assessments performed within the last 3 years by licensed professionals	1.9
Repair/renovation, modernization work already being performed and/or contracted for	1.8
Opinions of other district or school administrators	1.3
Other sources	1.1

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, Survey on the Condition of Public School Facilities, 1999.

Table 7a. —Standard errors of the percentage distribution of public schools indicating the type of source used for cost estimates and the average cost per school for all repairs, renovations, and modernizations required to bring the school's onsite buildings into good overall condition: 1999

Types of source for cost estimate	Percent of schools	Average cost per school
Professional judgment and opinions only	2.0	117,755.1
Written documents only	2.1	280,635.4
Combination of types of sources	0.9	398,792.9

NOTE: Standard errors are computed on unrounded numbers.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, Survey on the Condition of Public School Facilities, 1999.

Table 8a.—Standard errors of the percent of public schools rating the condition of environmental factors as unsatisfactory, by school characteristics: 1999

School characteristic	At least one environmental factor is in unsatisfactory condition	Lighting	Heating	Ventilation	Indoor air quality	Acoustics or noise control	Physical security of buildings
All public schools	1.6	1.4	1.3	1.4	1.3	1.1	1.2
School instructional level							
Elementary school	2.1	1.8	1.6	1.7	1.6	1.4	1.5
High school	2.8	2.0	2.5	2.8	2.4	2.8	3.1
Combined	9.2	7.2	7.5	8.5	6.7	8.3	9.5
School enrollment size							
Less than 300	4.6	2.9	3.3	3.9	3.4	3.8	3.6
300 to 599	3.0	2.4	2.5	2.8	2.3	2.2	2.4
600 or more	2.0	1.4	1.6	2.1	1.7	1.9	1.7
Locale							
Central city	3.8	2.6	2.6	3.2	3.2	2.6	2.6
Urban fringe/large town	2.9	1.7	2.1	2.8	2.3	1.9	2.1
Rural/small town	2.9	2.2	2.2	2.9	2.4	2.7	2.7
Region							
Northeast	4.5	2.6	3.3	4.2	3.5	3.3	3.3
Midwest	3.5	2.5	2.2	3.2	2.9	2.9	2.5
South	3.0	1.9	2.2	2.6	2.2	2.1	2.5
West	4.3	3.0	4.4	4.4	3.6	3.2	2.9
Percent minority enrollment							
5 percent or less	2.8	2.7	2.4	2.8	2.3	3.0	2.5
6 to 20 percent	3.5	2.5	3.0	3.0	2.6	2.5	2.7
21 to 50 percent	4.0	2.5	3.1	3.7	3.0	2.4	2.8
More than 50 percent	4.3	3.5	2.9	2.9	3.2	3.1	2.8
Percent of students in school eligible for free or reduced-price school lunch							
Less than 20 percent	3.4	2.0	2.7	3.2	2.3	2.3	2.0
20 to 39 percent	3.2	2.4	2.1	2.8	3.0	2.6	2.7
40 to 69 percent	3.6	2.2	2.7	2.9	2.6	2.5	3.0
70 percent or more	4.4	4.0	3.2	3.2	3.5	3.8	3.6

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, Survey on the Condition of Public School Facilities, 1999.

Table 9a.—Standard errors of the percentage distribution of public schools according to the status of air conditioning in various areas of their school buildings: 1999

Area	None air-conditioned because not needed	None air-conditioned, but needed	Some air-conditioned	Mostly air-conditioned	All air-conditioned
Classrooms	1.2	1.9	1.0	0.6	2.1
Administrative offices	0.8	1.3	1.2	1.1	1.7
Computer labs	1.1	1.5	1.1	0.8	1.6
Media centers	1.2	1.8	0.6	0.6	1.6
Other areas	1.5	1.9	1.1	1.2	2.2

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, Survey on the Condition of Public School Facilities, 1999.

Table 10a.—Standard errors of the percentage distribution of public schools according to the status of air conditioning in classrooms, by school characteristics: 1999

School characteristic	None air-conditioned because not needed	None air-conditioned, but needed	Some air-conditioned	Mostly air-conditioned	All air-conditioned
All public schools	1.2	1.9	1.0	0.6	2.1
School instructional level					
Elementary school	1.6	2.3	1.1	0.8	2.6
High school	1.7	2.7	2.4	1.2	3.2
Combined	6.7	8.6	2.4	6.0	8.9
School enrollment size					
Less than 300	3.1	4.1	2.2	1.9	4.5
300 to 599	2.7	3.2	1.6	0.9	3.5
600 or more	1.2	2.1	1.6	1.1	2.0
Locale					
Central city	2.5	3.0	2.0	0.9	3.8
Urban fringe/large town	2.2	2.8	1.8	1.1	2.9
Rural/small town	2.3	3.0	1.8	1.4	3.4
Region					
Northeast	4.2	4.4	2.7	0.4	3.0
Midwest	2.2	3.9	2.2	1.3	3.3
South	0.4	1.5	1.0	1.3	2.2
West	3.3	4.7	2.6	1.4	4.5
Percent minority enrollment					
5 percent or less	2.7	3.7	2.0	1.3	3.8
6 to 20 percent	2.6	4.3	2.0	1.1	4.4
21 to 50 percent	2.7	3.1	2.2	1.7	3.6
More than 50 percent	2.5	3.0	2.1	1.4	3.4
Percent of students in school eligible for free or reduced-price school lunch					
Less than 20 percent	2.5	3.5	2.5	1.1	4.0
20 to 39 percent	2.5	2.9	2.2	1.3	3.1
40 to 69 percent	2.7	2.8	2.0	1.4	4.1
70 percent or more	2.3	3.3	2.3	2.0	4.4

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, Survey on the Condition of Public School Facilities, 1999.

Table 11a.—Standard errors of the percent of public schools with air conditioning in various areas of the school, and the percentage distribution of those schools according to satisfaction with the condition of air conditioning in the school areas: 1999

Area	Area is all or partially air-conditioned	Condition of air conditioning					
		Satisfactory			Unsatisfactory		
		Total	Very satisfactory	Satisfactory	Total	Unsatisfactory	Very unsatisfactory
Classrooms	1.9	1.6	1.9	2.1	1.6	1.4	0.9
Administrative offices	1.4	1.5	1.8	2.0	1.5	1.3	0.7
Computer labs	1.6	1.6	1.9	2.1	1.6	1.4	0.8
Media centers	1.6	1.5	1.9	2.3	1.5	1.3	0.9
Other areas	2.3	1.6	2.2	2.2	1.6	1.6	0.9

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, Survey on the Condition of Public School Facilities, 1999.

Table 12a.—Standard errors of the percent of public schools with a written long-range educational facilities plan for the school, by school characteristics: 1999

School characteristic	School has written facilities plan
All public schools	1.9
School instructional level	
Elementary school	2.3
High school	2.9
Combined	9.4
School enrollment size	
Less than 300	4.9
300 to 599	3.3
600 or more	2.3
Locale	
Central city	3.4
Urban fringe/large town	2.8
Rural/small town	2.9
Region	
Northeast	4.9
Midwest	3.8
South	2.8
West	4.3
Percent minority enrollment	
5 percent or less	3.8
6 to 20 percent	3.7
21 to 50 percent	3.5
More than 50 percent	3.7
Percent of students in school eligible for free or reduced-price school lunch	
Less than 20 percent	4.2
20 to 39 percent	3.6
40 to 69 percent	3.8
70 percent or more	4.1

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, Survey on the Condition of Public School Facilities, 1999

Table 13a.—Standard errors of the percent of public schools with construction projects planned for the school in the next 2 years, by school characteristics: 1999

School characteristic	Build new attached/ detached permanent additions	Install new temporary buildings
All public schools	1.4	1.1
School instructional level		
Elementary school	1.7	1.3
High school	2.8	1.9
Combined	7.4	2.5
School enrollment size		
Less than 300	3.0	1.9
300 to 599	2.4	1.4
600 or more	1.7	2.1
Locale		
Central city	2.0	2.4
Urban fringe/large town	2.4	1.7
Rural/small town	2.0	1.4
Region		
Northeast	3.7	1.8
Midwest	2.4	1.4
South	2.6	1.9
West	2.5	3.9
Percent minority enrollment		
5 percent or less	2.5	1.6
6 to 20 percent	3.2	2.6
21 to 50 percent	3.4	2.5
More than 50 percent	2.8	1.9
Percent of students in school eligible for free or reduced-price school lunch		
Less than 20 percent	2.9	2.1
20 to 39 percent	2.5	2.3
40 to 69 percent	3.0	2.1
70 percent or more	3.3	2.1

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, Survey on the Condition of Public School Facilities, 1999.

Table 14a.—Standard errors of the percent of public schools with plans to make at least one major repair, renovation, or replacement to a building feature in the next 2 years, by school characteristics: 1999

School characteristic	At least one major repair, renovation or replacement planned	Major repair or renovation planned	Replacement planned
All public schools	1.6	1.8	1.2
School instructional level			
Elementary school	2.2	2.3	1.6
High school	3.1	3.2	2.6
Combined	9.0	8.5	7.7
School enrollment size			
Less than 300	4.4	4.2	3.2
300 to 599	2.9	3.1	2.2
600 or more	2.4	2.6	2.1
Locale			
Central city	3.8	3.6	3.2
Urban fringe/large town	3.3	3.2	2.4
Rural/small town	3.2	2.9	2.2
Region			
Northeast	4.3	4.1	4.1
Midwest	3.6	3.8	2.5
South	3.0	3.4	2.5
West	3.8	4.3	3.2
Percent minority enrollment			
5 percent or less	3.4	2.9	2.7
6 to 20 percent	3.2	3.4	3.2
21 to 50 percent	4.0	4.1	3.1
More than 50 percent	3.8	3.8	3.5
Percent of students in school eligible for free or reduced-price school lunch			
Less than 20 percent	3.8	3.5	3.4
20 to 39 percent	3.1	3.2	2.7
40 to 69 percent	3.4	3.5	3.2
70 percent or more	3.9	4.1	3.7

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, Survey on the Condition of Public School Facilities, 1999.

Table 15a.—Standard errors of the percentage distribution of public schools according to their plans for major repair, renovation, or replacement of each building feature in the next 2 years: 1999

Feature	No planned repair, renovation, or replacement	Major repair or renovation	Replacement
Roofs	1.4	1.1	1.0
Framing, floors, foundations	1.0	0.8	0.7
Exterior walls, finishes, windows, doors	1.3	1.2	0.7
Interior finishes, trim	1.3	1.1	0.7
Plumbing	1.4	1.3	0.8
Heating, ventilation, air conditioning	1.7	1.4	1.0
Electric power	1.5	1.3	0.8
Electrical lighting	1.2	1.0	0.9
Life safety features	1.3	1.0	0.9

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, Survey on the Condition of Public School Facilities, 1999.

Table 16a.—Standard errors of the percentage distribution of public schools according to school plans for major repair, renovation, or replacement of each building feature in the next 2 years, by condition of the building feature: 1999

Building feature and condition	No planned repair, renovation, or replacement	Major repair or renovation	Replacement
Roofs			
Adequate or better	1.2	1.0	0.6
Less than adequate	4.0	2.9	3.5
Framing, floors, foundation			
Adequate or better	1.0	0.9	0.5
Less than adequate	5.0	3.6	3.7
Exterior walls, finishes, windows, doors			
Adequate or better	1.2	1.0	0.6
Less than adequate	4.2	3.5	3.0
Interior finishes, trim			
Adequate or better	1.3	1.2	0.3
Less than adequate	4.1	3.7	3.5
Plumbing			
Adequate or better	1.1	1.1	0.6
Less than adequate	4.0	3.3	2.8
Heating, ventilation, air conditioning			
Adequate or better	2.0	1.7	0.8
Less than adequate	3.5	2.9	3.0
Electric power			
Adequate or better	1.1	1.0	0.6
Less than adequate	3.9	4.3	2.9
Electrical lighting			
Adequate or better	1.1	1.0	0.7
Less than adequate	4.5	4.0	3.5
Life safety features			
Adequate or better	1.2	1.0	0.7
Less than adequate	4.2	4.0	3.6

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, Survey on the Condition of Public School Facilities, 1999.

Table 17a.—Standard errors of the age of public schools based upon years since construction of the main instructional building(s), years since most recent major renovation, and functional age of the school, by school characteristics: 1999

School characteristic	Years since construction	Years since most recent renovation	Functional age of the school
All public schools	0.8	0.6	0.6
School instructional level			
Elementary school	1.0	0.6	0.8
High school	1.6	0.9	0.8
Combined	3.8	1.9	2.7
School enrollment size			
Less than 300	1.7	1.4	1.6
300 to 599	1.5	1.0	1.1
600 or more	1.0	0.6	0.8
Locale			
Central city	1.2	1.2	1.3
Urban fringe/large town	1.1	0.8	0.8
Rural/small town	1.5	0.9	1.1
Region			
Northeast	1.9	1.4	1.4
Midwest	1.5	1.1	1.4
South	1.2	0.7	1.0
West	1.9	1.4	1.3
Percent minority enrollment			
5 percent or less	1.7	0.8	1.2
6 to 20 percent	1.9	1.5	1.1
21 to 50 percent	1.4	1.1	1.4
More than 50 percent	1.4	1.1	1.2
Percent of students in school eligible for free or reduced-price school lunch			
Less than 20 percent	1.6	1.0	1.0
20 to 39 percent	1.6	1.0	1.1
40 to 69 percent	1.4	1.0	1.1
70 percent or more	1.7	1.5	1.6

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, Survey on the Condition of Public School Facilities, 1999.

Table 18a.—Standard errors of the percentage distribution of public schools according to the functional age of the school, by school characteristics: 1999

School characteristic	Functional age of the school			
	Less than 5 years old	5-14 years old	15-34 years old	35 or more years old
All public schools	1.5	1.5	1.4	1.4
School instructional level				
Elementary school	1.6	1.9	1.6	1.7
High school	2.7	2.8	2.9	2.0
Combined	8.6	5.8	8.2	5.4
School enrollment size				
Less than 300	4.1	3.7	4.1	3.6
300 to 599	2.7	2.7	2.4	2.5
600 or more	2.4	2.4	2.0	1.8
Locale				
Central city	3.6	3.1	2.8	2.9
Urban fringe/large town	2.9	2.7	2.2	1.9
Rural/small town	2.9	2.7	2.9	2.4
Region				
Northeast	5.3	4.2	4.6	2.3
Midwest	2.9	3.1	3.0	3.1
South	2.6	2.3	2.3	2.2
West	4.5	3.5	3.5	3.5
Percent minority enrollment				
5 percent or less	2.6	3.2	3.3	2.5
6 to 20 percent	3.6	3.9	2.9	2.8
21 to 50 percent	3.7	3.1	2.8	3.1
More than 50 percent	3.6	3.1	3.2	3.1
Percent of students in school eligible for free or reduced-price school lunch				
Less than 20 percent	3.4	3.7	3.1	2.2
20 to 39 percent	2.9	3.0	2.6	2.7
40 to 69 percent	3.8	3.0	2.7	2.2
70 percent or more	4.0	3.7	4.0	3.9

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, Survey on the Condition of Public School Facilities, 1999.

Table 19a.—Standard errors of the percentage distribution of public schools reporting that they are underenrolled, at capacity, or overcrowded, by school characteristics: 1999

School characteristic	Underenrolled		Enrollment within 5 percent of capacity	Overcrowded	
	More than 25 percent	6-25 percent		6-25 percent	More than 25 percent
All public schools	1.5	1.7	1.5	1.2	0.9
School instructional level					
Elementary school	1.7	2.1	2.0	1.5	1.1
High school	2.7	3.0	1.9	1.9	1.8
Combined	9.1	7.7	7.6	4.4	3.4
School enrollment size					
Less than 300	5.0	4.2	3.4	2.9	1.6
300 to 599	2.5	2.8	2.6	2.5	1.2
600 or more	1.4	3.4	2.0	1.6	1.8
Locale					
Central city	3.0	3.3	2.9	1.8	2.3
Urban fringe/large town	2.0	3.0	2.8	2.0	1.6
Rural/small town	2.7	3.2	2.4	2.4	1.3
Region					
Northeast	3.3	4.2	4.3	3.9	1.6
Midwest	3.0	3.5	2.8	2.1	1.5
South	3.0	2.7	2.9	2.1	1.6
West	3.2	3.3	3.1	3.2	2.7
Percent minority enrollment					
5 percent or less	3.1	3.0	2.5	3.0	1.2
6 to 20 percent	2.7	3.7	3.6	3.1	2.1
21 to 50 percent	3.8	3.4	3.8	2.4	1.5
More than 50 percent	2.8	3.3	3.5	2.4	2.7
Percent of students in school eligible for free or reduced-price school lunch					
Less than 20 percent	2.4	3.2	3.3	2.8	1.6
20 to 39 percent	3.1	3.2	3.0	2.4	1.8
40 to 69 percent	2.7	4.0	3.4	2.6	2.0
70 percent or more	4.0	4.1	3.9	2.6	2.9

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, Survey on the Condition of Public School Facilities, 1999.

Table 20a.—Standard errors of the percent of public schools in each enrollment to capacity ratio category rating the condition of building features as less than adequate: 1999

Building feature	Underenrolled	Enrollment within 5 percent of capacity	Overcrowded
Roofs	2.1	3.2	3.3
Framing, floors, foundations	1.7	2.4	3.7
Exterior walls, finishes, windows, doors	2.0	3.0	3.8
Interior finishes, trim	1.9	3.2	4.1
Plumbing	2.1	3.1	4.1
Heating, ventilation, air conditioning	2.0	3.5	1.5
Electric power	2.0	3.1	3.8
Electrical lighting	1.8	3.3	3.6
Life safety features	1.9	3.2	3.5

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, Survey on the Condition of Public School Facilities, 1999.

Table 21a.—Standard errors of the percent of public schools in each enrollment to capacity ratio category rating the condition of environmental factors as unsatisfactory: 1999

Environmental factor	Underenrolled	Enrollment within 5 percent of capacity	Overcrowded
Lighting	2.0	2.4	2.8
Heating	1.5	2.8	3.7
Ventilation	2.0	2.8	3.4
Indoor air quality	1.6	2.3	3.2
Acoustics or noise control	1.7	2.7	3.6
Physical security of buildings	1.8	3.4	3.3

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, Survey on the Condition of Public School Facilities, 1999.

Table 22a.—Standard errors of the percent of public schools that report using various space and scheduling practices, and the extent to which the practice is used to alleviate overcrowding: 1999

Space or scheduling practice	School uses practice	Extent of use to alleviate overcrowding			
		Great	Moderate	Minor	Not at all
Spaces used					
Use of portable classrooms	2.0	2.9	2.6	2.7	1.0
Creation of temporary instructional space (e.g., in cafeterias or gyms)	1.5	4.2	3.5	3.7	1.2
Use of portables for other purposes, such as offices for administration and resource personnel	0.9	4.9	5.6	5.9	2.4
Use of off-site instructional facilities	1.0	4.7	4.9	6.5	4.9
Scheduling					
Staggered lunch schedules	1.9	2.3	1.7	1.6	1.8
Year-round schedule	0.8	6.7	4.9	6.2	8.3
Split-day schedules	0.7	—	—	—	—

— Too few cases for a reliable estimate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, Survey on the Condition of Public School Facilities, 1999.

Table 23.—Standard errors for the figures and for data not shown in tables: 1999

Item	Estimate	Standard error
Figure 1: Percentage distribution of public schools with at least one building feature in less than adequate condition according to the number of building features that are in less than adequate condition: 1999		
Number of building features in less than adequate condition: 1	24	2.2
Number of building features in less than adequate condition: 2	16	1.9
Number of building features in less than adequate condition: 3	15	1.9
Number of building features in less than adequate condition: 4	9	1.5
Number of building features in less than adequate condition: 5	10	1.6
Number of building features in less than adequate condition: 6	7	1.5
Number of building features in less than adequate condition: 7	6	1.2
Number of building features in less than adequate condition: 8	7	1.5
Number of building features in less than adequate condition: 9	7	1.3
Figure 2: Percentage distribution of public schools with at least one environmental factor in unsatisfactory condition according to the number of environmental factors that are in unsatisfactory condition: 1999		
Number of environmental factors in less than satisfactory condition: 1	32	2.5
Number of environmental factors in less than satisfactory condition: 2	30	2.7
Number of environmental factors in less than satisfactory condition: 3	13	1.9
Number of environmental factors in less than satisfactory condition: 4	9	1.4
Number of environmental factors in less than satisfactory condition: 5	8	1.6
Number of environmental factors in less than satisfactory condition: 6	8	1.4
Figure 3: Percentage distribution of public schools with facilities-related closures according to the number of instructional days the school was closed due to inadequacies or problems with facilities during the 1998-99 school year		
1 day	60	10.2
2 or 3 days	30	9.6
5 to 9 days	10	6.8
Figure 4: Percentage distribution of public schools according to whether there are plans to make major repairs, renovations, or replacements of any building feature in the next 2 years, by condition of onsite buildings: 1999		
All types of buildings in adequate or better condition: Plans to make repairs	46	1.8
All types of buildings in adequate or better condition: No plans to make repairs	54	1.8
At least one type of onsite building in less than adequate condition: Plans to make repairs	67	3.8
At least one type of onsite building in less than adequate condition: No plans to make repairs	33	3.8
Figure 5: Percentage distribution of public schools according to the functional age of the school: 1999		
Less than 5 years old	32	1.5
5 to 14 years old	28	1.5
15 to 34 years old	26	1.4
35 or more years old	14	1.4
Figure 6: Percent of public schools with at least one type of onsite building in less than adequate condition, at least one building feature in less than adequate condition, or at least one environmental factor in unsatisfactory condition, by functional age category: 1999		
At least one type of onsite building in less than adequate condition: Less than 5 years	14	2.2
At least one type of onsite building in less than adequate condition: 5-14 years	19	2.7
At least one type of onsite building in less than adequate condition: 15-34 years	32	3.7
At least one type of onsite building in less than adequate condition: 35 years or more	41	5.1
At least one building feature is in less than adequate condition: Less than 5 years	39	2.4
At least one building feature is in less than adequate condition: 5-14 years	41	2.7
At least one building feature is in less than adequate condition: 15-34 years	61	3.2
At least one building feature is in less than adequate condition: 35 years or more	77	4.9
At least one environmental factor is in unsatisfactory condition: Less than 5 years	34	2.6
At least one environmental factor is in unsatisfactory condition: 5-14 years	34	2.8
At least one environmental factor is in unsatisfactory condition: 15-34 years	51	3.2
At least one environmental factor is in unsatisfactory condition: 35 years or more	67	4.9

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Table 23.—Standard errors for the figures and for data not shown in tables: 1999 (continued)

Item	Estimate	Standard error
Figure 7: Percentage distribution of public schools in each category of functional age by whether there are plans to make major repairs, renovations, or replacements of any building feature in the next 2 years: 1999		
Plans to make at least 1 major repair, renovation, or replacement of a building feature: Less than 5 years	49	2.6
Plans to make at least 1 major repair, renovation, or replacement of a building feature: 5-14 years	40	3.7
Plans to make at least 1 major repair, renovation, or replacement of a building feature: 15-34 years	61	3.3
Plans to make at least 1 major repair, renovation, or replacement of a building feature: 35 years or more	56	6.4
No plans to make major repairs, renovations, or replacements to building features: Less than 5 years	51	2.6
No plans to make major repairs, renovations, or replacements to building features: 5-14 years	60	3.7
No plans to make major repairs, renovations, or replacements to building features: 15-34 years	39	3.3
No plans to make major repairs, renovations, or replacements to building features: 35 years or more	44	6.4
Figure 8: Percentage distribution of public schools reporting that they are underenrolled, at capacity, or overcrowded: 1999		
Underenrolled by more than 25 percent	19	1.5
Underenrolled by 6 to 25 percent	33	1.7
Enrollment within 5 percent of capacity	26	1.5
Overcrowded by 6 to 25 percent	14	1.2
Overcrowded by more than 25 percent	8	0.9
Figure 9: Percent of public schools with at least one type of onsite building in less than adequate condition, at least one building feature in less than adequate condition, or at least one environmental factor in unsatisfactory condition, by enrollment to capacity ratio category: 1999		
At least one type of building in less than adequate condition: Underenrolled	18	1.8
At least one type of building in less than adequate condition: Enrollment within 5 percent of capacity	19	3.5
At least one type of building in less than adequate condition: Overcrowded	43	3.7
At least one building feature in less than adequate condition: Underenrolled	47	2.4
At least one building feature in less than adequate condition: Enrollment within 5 percent of capacity	48	3.2
At least one building feature in less than adequate condition: Overcrowded	61	3.8
At least one environmental factor in unsatisfactory condition: Underenrolled	41	2.5
At least one environmental factor in unsatisfactory condition: Enrollment within 5 percent of capacity	39	3.8
At least one environmental factor in unsatisfactory condition: Overcrowded	53	3.6
Figure 10: Mean number of building features in less than adequate condition and mean number of environmental factors that are unsatisfactory, by enrollment to capacity ratio category: 1999		
Mean number of building features in less than adequate condition: Underenrolled	3.5	0.19
Mean number of building features in less than adequate condition: Enrollment within 5 percent of capacity	3.8	0.35
Mean number of building features in less than adequate condition: Overcrowded	4.5	0.30
Mean number of environmental factors that are unsatisfactory: Underenrolled	2.4	0.12
Mean number of environmental factors that are unsatisfactory: Enrollment within 5 percent of capacity	2.6	0.22
Mean number of environmental factors that are unsatisfactory: Overcrowded	2.9	0.18
Chapter 2, section on the presence and overall condition of onsite buildings		
Number of students attending schools where at least one type of building was in poor or replace condition	3.5 million	486,765

Table 23.—Standard errors for the figures and for data not shown in tables: 1999

Item	Estimate	Standard error
Chapter 2, section on the condition of building features		
Number of schools reporting at least one less than adequate building feature	39,500	1,211.5
Average number of building features in less than adequate condition	3.8	0.2
Chapter 2, section on costs to bring schools into good overall condition		
Number of schools needing to spend money on repairs, renovations, or modernizations to put the school into good overall condition	59,400	1,180.2
Total amount needed by all schools	127 billion	7.2 billion
Average amount needed per school for schools needing to spend money	2.2 million	117,000
Chapter 3, section on satisfaction with environmental conditions		
Number of schools reporting at least one unsatisfactory environmental condition	33,800	1,286.7
Average number of environmental conditions in unsatisfactory condition	2.6	0.1
Chapter 3, section on flexibility of instructional space and energy efficiency		
Percent of schools unsatisfied with flexibility of instructional space	38	1.7
Percent of schools unsatisfied with energy efficiency	32	1.6
Chapter 3, section on school closures due to facilities problems		
Percent of schools that were not closed any instructional days because of facilities problems	96	0.7
Percent of schools that were closed for instructional days because of facilities problems	4	0.7
Chapter 4, section on plans for construction		
Number of schools planning to install new temporary buildings in the next two years	8,100	822.9
Chapter 4, section on plans for major repair, renovation, or replacement of building features		
Number of schools having plans for major repairs, renovations, or replacements in the next 2 years	39,700	1,280.4
Average number of building features planned for repair or renovation	2.7	0.1
Number of schools with at least one type of onsite building in less than adequate condition that reported no plans for repair, renovation, or replacement in the next 2 years	6,300	709.1
Average number of building features planned for replacement	2.2	0.2
Chapter 6, section on extent of overcrowding		
Number of schools that were underenrolled	40,500	1,416.7
Number of schools at their capacity	20,400	1,157.5
Number of schools that were overcrowded	17,400	1,167.6
Chapter 6, footnote in section on school practices used to ease overcrowding		
Percent of instructional rooms in temporary structures	6	0.5
Percent of instructional rooms originally designed to serve noninstructional purposes	3	0.3

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, Survey on the Condition of Public School Facilities, 1999.

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Appendix C

Survey Questionnaire

U.S. DEPARTMENT OF EDUCATION NATIONAL CENTER FOR EDUCATION STATISTICS WASHINGTON, D.C. 20208-5651 **CONDITION OF PUBLIC SCHOOL FACILITIES** FAST RESPONSE SURVEY SYSTEM	FORM APPROVED O.M.B. No.: 1850-0733 EXPIRATION DATE: 09/1999

This survey is authorized by law (P.L. 103-382). While participation in this survey is voluntary, your cooperation is critical to make the results of this survey comprehensive, accurate, and timely.

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IF ABOVE INFORMATION IS INCORRECT, PLEASE UPDATE DIRECTLY ON LABEL.

Name of Person Completing This Form: _____

Title/Position: _____

Telephone Number: _____ E-mail: _____

Best days and times to contact you: _____

THANK YOU. PLEASE KEEP A COPY OF THIS SURVEY FOR YOUR RECORDS.

PLEASE RETURN COMPLETED FORM TO:	IF YOU HAVE ANY QUESTIONS, CONTACT:
Lewis (716609) WESTAT 1650 Research Boulevard Rockville, Maryland 20850	Laurie Lewis at Westat 800-937-8281, Ext. 8284 or 301-251-8284 Fax: 800-254-0984 E-mail: lewisl1@westat.com

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 1850-0733. The time required to complete this information collection is estimated to average 30 minutes per response, including the time to review instructions, search existing data resources, gather the data needed, and complete and review the information collection. If you have any comments concerning the accuracy of the time estimate or suggestions for improving this form, please write to: U.S. Department of Education, Washington, DC 20202-4651. If you have any comments or concerns regarding the status of your individual submission of this form, write directly to: National Center for Education Statistics, 555 New Jersey Avenue, NW, Washington, DC 20208.

FRSS Form No. 73, 07/1999

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1. Indicate in Part 1 the overall condition of the original buildings, the attached and/or detached permanent additions, and the temporary buildings that are on site at this school. In Part 2, indicate the physical condition of each of the building features listed for this school's onsite buildings. *Refer to the rating scale shown below, and circle one number for each category of building or building feature. If this school does not have any permanent additions or any temporary buildings on site, circle "0" for that type of building. Do not circle any NA responses; all schools have original buildings and the listed building features.*

Overall condition includes both physical condition and the ability of the buildings to meet the functional requirements of instructional programs.

Rating Scale

Excellent: new or easily restorable to "like new" condition; only minimal routine maintenance required.
Good: only routine maintenance or minor repair required.
Adequate: some preventative maintenance and/or corrective repair required.
Fair: fails to meet code and functional requirement in some cases; failure(s) are inconvenient; extensive corrective maintenance and repair required.
Poor: consistent substandard performance; failure(s) are disruptive and costly; fails most code and functional requirements; requires constant attention, renovation, or replacement. Major corrective repair or overhaul required.
Replace: Non-operational or significantly substandard performance. Replacement required.

Building type/feature	School does not have	Excellent	Good	Adequate	Fair	Poor	Replace
			(Circle one on each line.)				
Part 1: Type of Onsite Buildings							
a. Original buildings	NA	1	2	3	4	5	6
b. Attached and/or detached permanent additions to original buildings	0	1	2	3	4	5	6
c. Temporary buildings (e.g., portables, demountables)	0	1	2	3	4	5	6
Part 2: Features of Onsite Buildings							
d. Roofs	NA	1	2	3	4	5	6
e. Framing, floors, foundations	NA	1	2	3	4	5	6
f. Exterior walls, finishes, windows, doors	NA	1	2	3	4	5	6
g. Interior finishes, trim	NA	1	2	3	4	5	6
h. Plumbing	NA	1	2	3	4	5	6
i. Heating, ventilation, air conditioning	NA	1	2	3	4	5	6
j. Electric power	NA	1	2	3	4	5	6
k. Electrical lighting	NA	1	2	3	4	5	6
l. Life safety features (e.g., sprinklers, fire alarms)	NA	1	2	3	4	5	6

2. What would probably be the total cost of all repairs/renovations/modernizations required to put this school's onsite buildings in good overall condition? *(Give your best estimate. If this school's onsite buildings are already in good or excellent overall condition, enter zero.)*

$_____

3. On which of the sources listed below is this cost estimate based? *(Circle all that apply.)*

a. Does not apply – already in good or excellent overall condition 1
b. Facilities inspection(s)/assessment(s) performed within the last 3 years by licensed professionals 2
c. Repair/renovation/modernization work already being performed and/or contracted for 3
d. Capital improvement/facilities master plan, schedule, or budget 4
e. My best professional judgment 5
f. Opinions of other district or school administrators 6
g. Other (*specify*) _____ 7

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4. How satisfactory or unsatisfactory is each of the following environmental factors in this school's onsite buildings? *(Circle one on each line.)*

Environmental factor	Very satisfactory	Satisfactory	Unsatisfactory	Very unsatisfactory
		(Circle one on each line.)		
a. Lighting	1	2	3	4
b. Heating	1	2	3	4
c. Ventilation	1	2	3	4
d. Indoor air quality	1	2	3	4
e. Acoustics or noise control	1	2	3	4
f. Flexibility of instructional space (e.g., expandability, convertibility, adaptability)	1	2	3	4
g. Energy efficiency	1	2	3	4
h. Physical security of buildings	1	2	3	4

5. What is the **status** of air conditioning in each of the following areas of this school? *(Circle one on each line.)*

Area	None air conditioned because not needed	None air conditioned, but needed	Some air conditioned	Mostly air conditioned	All air conditioned
			(Circle one on each line.)		
a. Classrooms	1	2	3	4	5
b. Administrative offices	1	2	3	4	5
c. Computer labs	1	2	3	4	5
d. Media centers	1	2	3	4	5
e. Other areas	1	2	3	4	5

6. How satisfactory or unsatisfactory is the air conditioning in each of the following areas of the school? If an area is not air conditioned, then circle "0" for that area. *(Circle one on each line.)*

Area	Area is not air conditioned	Very satisfactory	Satisfactory	Unsatis-factory	Very unsatis-factory
			(Circle one on each line.)		
a. Classrooms	0	1	2	3	4
b. Administrative offices	0	1	2	3	4
c. Computer labs	0	1	2	3	4
d. Media centers	0	1	2	3	4
e. Other areas	0	1	2	3	4

7. For how many instructional days, if any, was this school closed because of facilities inadequacies or problems during the 1998-1999 school year? *(Enter "0" if none.)* _____

8. Is there a written long-range educational facilities plan for this school? Yes..... 1 No..... 2

9. In what year was this school's main instructional building constructed? _____

10. In what year was the last major renovation of the main instructional building? _____

11. Which of the following construction projects, if any, are planned **for this school** in the next 2 years? *(Circle one on each line.)*

	Yes	No
a. Build new attached and/or detached **permanent** additions to original buildings (e.g., a new classroom wing or gymnasium)	1	2
b. Install new **temporary** buildings (i.e., portables, demountables, or other temporary structures)	1	2

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12. Which of the following building features or systems **in this school**, if any, have major repairs, renovations, or replacements planned for the next 2 years? Do not include preventive maintenance or minor repairs. *(Circle one on each line.)*

Building feature/system	No major repair, renovation, or replacement planned	Major repair or renovation	Replacement
		(Circle one on each line.)	
a. Roofs	1	2	3
b. Framing, floors, foundations	1	2	3
c. Exterior walls, finishes, windows, doors	1	2	3
d. Interior finishes, trim	1	2	3
e. Plumbing	1	2	3
f. Heating, ventilation, air conditioning	1	2	3
g. Electric power	1	2	3
h. Electrical lighting	1	2	3
i. Life safety features (e.g., sprinklers, fire alarms)	1	2	3

13. What is the total number of instructional rooms in this school? *(Include all rooms used for any instructional purpose, including classrooms, computer and other labs, media centers, etc. Include portables and other temporary instructional space.)* _____

14. How many of these instructional rooms are temporary structures (e.g., portables, demountables)? *(Enter "0" if none.)* _____

15. How many of these instructional rooms, if **any, were** initially designed to serve noninstructional purposes? *(Enter "0" if none.)* _____

16. How many students is this school currently designed to serve? *(Do **not** include space provided by portables and other temporary instructional space. If this school consists entirely of temporary buildings, call Westat at 800-937-8281, ext. 8284, for instructions.)* _____

17. On October 1, 1998, how many students were enrolled in this school? _____

18. For each practice listed below, indicate whether or not this school uses the practice, and if used, to what extent it is used as a means of alleviating overcrowding at the school.

Practice	School uses practice		If used, extent to which it is used to alleviate overcrowding			
	Yes	No	Great extent	Moderate extent	Minor extent	Not at all
a. Year-round schedule	1	2	1	2	3	4
b. Split-day schedules	1	2	1	2	3	4
c. Staggered lunch schedules	1	2	1	2	3	4
d. Use of off-site instructional facilities	1	2	1	2	3	4
e. Use of portable classrooms	1	2	1	2	3	4
f. Use of portables for other purposes, such as offices for administration and resource personnel.	1	2	1	2	3	4
g. Creation of temporary instructional space (e.g., in cafeterias or gyms)	1	2	1	2	3	4

19. Which of the following grades did this school offer during the 1998-1999 school year? *(Circle all that apply.)*

Head Start PK K 1 2 3 4 5 6 7 8 9 10 11 12 Ungraded

20. During the 1998-1999 school year, what percentage of the students at this school were eligible for the federally funded free or reduced-price lunch program? _____ %

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